



A GUIDEBOOK FOR USING  
HOME MORTGAGE DISCLOSURE DATA  
FOR COMMUNITY DEVELOPMENT AND MAINTENANCE

PREPARED FOR

U. S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
OFFICE OF POLICY DEVELOPMENT AND RESEARCH

BY

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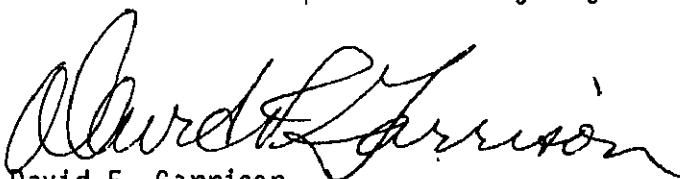
## FOREWORD

The Home Mortgage Disclosure Act is a sleeping giant. While the Act has been in existence for four years, its wide variety of potential uses are only starting to be understood. It can provide persuasive evidence of discrimination. It can show shifts in credit patterns and racial transition. It can improve the competitive environment because it can show lenders what their share of the market is.

But all of this knowledge only comes to those who use the data. As many neighborhood organizations know, this is not an easy task. Those with the capacity to undertake more sophisticated analyses have generally not known how to do so. This guidebook is for these organizations. It shows how local governments and areawide planning agencies, who are the ones with staff and hardware, can begin to analyze the data. It contains the methods developed by the Northeast Ohio Areawide Coordinating Agency (NOACA) to gather and analyze the data.

The benefits to be repaid from the work are many and varied. As a result of NOACA's analyses, Cleveland's six largest commercial banks agreed to join the city in a UDAG proposal and committed \$10 million to it. The information was also used for several challenges for financial institutions' branches and to encourage local lending institutions to form a consortium to increase mortgage availability. A hospital in the area has even used the data in its planning for expansion.

This book is designed to provide other areawide planning agencies and the local governments with the information to produce similar success stories in their areas. The Department urges local governments and areawide planning agencies to begin collecting the data and using it in their planning processes. The initial effort put into analyzing the data will be repaid many fold.



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## INTRODUCTION

Those engaged in community development and maintenance, particularly within central cities, rarely are provided a legislative tool as valuable as the Home Mortgage Disclosure Act of 1975 (HMDA). More precisely, the tool is not the Act itself but in what can be done with the information made available because of the Act.

HMDA requires federally-regulated financial institutions to disclose annually the number, location and size of loans made for the purchase and improvement of residential properties. Private sector investment is a key factor in the rise and fall of neighborhoods and communities.

HMDA data, however, are valuable in the same sense as unfinished gems. The information, as reported by lenders, is in a "raw" state of unrealized potential value. The data must be compiled, processed and analyzed in order to realize that potential. These tasks are relatively easy to undertake once defined, but certain technical skills are required--as well as the aid of a computer when, in large cities, large amounts of data are involved.

Principal users of HMDA data during the first four years of the Act's legislative life (1976-1980) were community organizations who were attempting to document the existence of inequitable lending practices. Most were novices in the field of data processing. Often working with hand calculators, they were faced with an almost impossible chore. It is not surprising that use of HMDA data was sparse during those early years.

There was enough use, however, to establish the importance of extending

enactment. That milestone having been passed, it is now more timely than ever for those who possess the needed technical resources--areawide '701 planning organizations and municipal and county planning departments--to enter the picture and take full advantage of HMDA. This means using HMDA data to produce managerial tools--businesslike analyses and information--which support reinvestment in areas where investment currently is low or declining.

This guidebook is offered as an aid to those who wish to undertake such a project. It is the result of the experience gained by one '701' organization through efforts to construct a rationale and use for HMDA data in the processes of community development and maintenance.

The book is meant to be both practical and conceptual. Techniques and methods for analyzing and presenting HMDA data are described along with the design concept and its supporting rationale.

The guidebook is organized in three parts. The first is essentially non-technical and describes the design, rationale, outcomes and resources required for planners, elected officials and community organizations to undertake the project.

The second part contains detailed technical descriptions of data tables, illustrations and data processing. The third part contains special technical appendices.

## CHAPTER 1

### OVERVIEW OF HMDA PROJECT

The project described in this guidebook was created by an areawide planning organization (APO) as part of its HUD Comprehensive Planning Assistance '701' housing element implementation program.

The Northeast Ohio Areawide Coordinating Agency (NOACA), which serves as the APO for the Cleveland and Lorain, Ohio, metropolitan areas, undertook to determine if the information provided through the Home Mortgage Disclosure Act of 1975 (HMDA) could be used toward National Urban Policy Objectives of conserving and improving existing communities, and increasing housing opportunities and choice for minorities.

The starting point was to collect all the HMDA information available for the Cleveland area and then to consider the question, How can this information be organized and presented to yield whatever practical value it may contain? The process of answering led not only to a data analysis design concept, but to the realization that HMDA data make possible a new and promising framework for planning and managing community development and maintenance.

The following description of the project is comprised of seven sections. Initially discussed is the significance of the Home Mortgage Disclosure Act with a brief history of its early use.

Following that is the rationale for using HMDA data in a particular approach termed "businesslike." The objective of this approach is defined



Third, given this approach, objective and implications, the appropriateness of '701' areawide planning agencies for undertaking the project is considered.

Fourth, the data analysis design concept is outlined in detail.

The fifth section discusses possible outcomes, both immediate and longer-term, of the project, with emphasis on uses in community development strategies.

The final two sections cover the process of project implementation and the resources required to undertake the project.

#### HMDA SIGNIFICANCE AND HISTORY

The Home Mortgage Disclosure Act is an unusually significant piece of federal legislation because of its potential to influence one of the key factors shaping the health and well-being of residential areas: the flow of private sector investment capital through the local economic system.

Private sector investment in residential properties is essential for community maintenance, but it is not the only factor affecting the health of communities. Far from it. Equally important are residents themselves (their standards, values and income) and their public officials and city administration (their standards and performance). All factors interact and collectively produce a level of community health.

Although this interaction makes the distinction between cause and effect impossible to identify with certainty, recent history of cities has clearly established that the extent of financial institution investment in a community is, at minimum, a reliable indicator of the state of

form of mortgage, rehabilitation and home improvement loans are most likely stable or undergoing revitalization. Conversely, areas receiving little or reduced financial support are most likely in decline. The Home Mortgage Disclosure Act enables this indicator to be documented.

HMDA requires depository institutions located in SMSA's--federally insured or regulated savings and loan associations, commercial banks, credit unions and mutual savings banks--with assets over \$10 million to publish certain facts on the institution's annual investment in residential properties.

The purpose of the legislation (Public Law 94-200, Title III) is:

To provide the citizens and public officials of the United States with sufficient information to enable them to determine whether depository institutions are fulfilling their obligations to serve the housing needs of the communities and neighborhoods in which they are located and to assist public officials in their determination of the distribution of public sector investments in a manner designed to improve the private investment environment.

It should also be noted that the legislation emphasizes that "Nothing in this title is intended to, nor shall it be construed to, encourage unsound lending practices or the allocation of credit."

For each census tract within an SMSA where a depository institution has its home office or a branch office, the institution must report the total number of residential mortgage and home improvement loans made in each year, along with the total amount of principal loaned for each category of loans. HMDA-regulated institutions have been reporting this information since 1976 (that is, the first reports published 1975 data).

The initial users of these data were primarily central city community organizations who believed that financial institutions were disinvesting

from their neighborhoods and arbitrarily denying the extension of mortgage and home improvement credit, a practice known as "redlining." Organizations in a number of cities collected disclosure statements from financial institutions with offices in their neighborhoods and analyzed the data mainly in terms of comparisons between geographic areas, the object being to identify inequitable or discriminatory lending patterns. Invariably, results showed uneven distributions of loans, with higher income suburbs receiving much more investment than older lower-income central city neighborhoods--particularly those with significant percentages of minority residents.

Community organizations maintained that their original assertions were confirmed, that depository institutions were not "filling their obligation to serve the housing needs of the communities and neighborhoods in which they were located"--particularly those with a significant percentage of minority residents. But then what? HMDA legislation does not specify sanctions for a failure to fulfill an obligation, nor does it specifically define a failure. Community groups reacted both to the findings and the vague legislation by creating public exposure and pressure. With documentation of lending patterns in hand, they began to confront lenders with demands for increased support for their neighborhoods; they began to confront financial institution regulatory agencies by challenging lender applications for new branches, mergers, change of office locations, etc. In some cases, the combination of documentation and publicity was enough to encourage an institution to agree to new programs or procedures.<sup>1</sup>

The lack of sanctions in HMDA, coupled with confrontation through documentation, generally limited, however, the influence community

organizations (or others, such as a local unit of government) could muster in relation to financial institutions or regulatory agencies. That situation was greatly altered by passage of the Community Reinvestment Act (CRA) of 1977. (Title VIII of the Housing and Community Development Act of 1977, Public Law 95-128.) The essence of CRA is that financial institutions have a "continuing and affirmative obligation to help meet credit needs of their communities, including low- and moderate-income neighborhoods

The moment CRA went into effect (November, 1978) it became, in combination with HMDA, one of the most significant pieces of federal legislation yet enacted for the benefit of economically weaker or racially integrating communities. There are several reasons for this.

First, CRA has enforcement powers (although there are those who consider the Act to be flawed, incomplete and very limited in powers).<sup>2</sup> It provides for sanctions, imposed through regulatory agencies, against those institutions judged to be failing in their responsibility to fulfill a continuing and affirmative obligation to help meet the credit needs of the communities wherein they do business.

Second, CRA and HMDA are automatically and operationally linked in practice, as HMDA data constitute the only yardstick of any substance available to the public for measuring the performance of an institution for CRA purposes. As such, CRA converts into reality the theory of HMDA's potential impact on the flow of private sector investment capital.

Third, CRA has the capacity to affect the entire complex of housing-related organizations that influences stability and welfare of communities and neighborhoods--particularly those with a high or increasing percentage

companies. All these parties are functionally interrelated; they form a system. Thus, when one party is affected, that party can in turn affect others. Financial institutions, being influential members of that system, can, in reaction to attention received because of CRA, affect practices of other organizations. (This point will be discussed further in the section on possible outcomes of HMDA analyses.)

### RATIONALE AND OBJECTIVE

HMDA data, therefore, can be used to create pressure on financial institutions for the purpose of increasing financial and institutional support for particular neighborhoods or communities. That use has its place. Indications are that, without pressure, more than a few financial institutions would shape their lending practices by the human inclination to take the path of least resistance by minimizing risks and problems maximizing security and profitability. As one bank executive stated:

The allegation that the collective home financing industry in our community has not fulfilled its obligation to the community is undoubtedly true to some extent but until a more convincing and comprehensive analysis of the problem emerges with objective information rather than emotional innuendo, I very much doubt that the financial industry will respond.\*

And an S & L official:

If people come to us from those [central city, mainly minority] areas we consider them as we consider any other loan applicant. But why should we go out and look for trouble?\*\*

---

\*Letter from Cleveland area bank executive.

\*\*Interview with Cleveland area S & L executive.

Given the choice--and the free market/free enterprise system encourages such choice--most lenders will naturally prefer to invest in newer suburbs over the older central city, or higher-income areas over lower-income areas. Because of this penchant, a role that community organizations have assumed as "pressure generators" has been inescapably necessary.

But action taken because of pressure is, in a sense, negative reaction. It is not the best action; it is likely to represent the minimum required to reduce the pressure--and once reduced, the strong tendency would be to return to business as usual.

Executives of financial institutions are businessmen and women. The more businesslike the process of attempting to increase lending in higher risk areas can be made, the more positive their attitudes and actions are likely to be. "Convincing and comprehensive analysis" with "objective information" rather than "emotional innuendo."

Thus, the ultimate objective of the particular use of HMDA data which is the subject of this guidebook is: to produce managerial tools--business like analyses and information--which support increased involvement by institutional lenders in areas where involvement currently is low or declining.

To achieve this objective, the analysis of HMDA data, together with findings and other products, must be not only convincing but immediately useful--and integrity of the data and technical methods employed must be indisputable.

These criteria must be met not only in relation to financial institu

and community development: local elected officials, planning organizations, community groups, HUD, EDA and federal regulatory agencies. In addition, the analysis should serve as a vehicle for drawing these interests together into shared perspectives, goals and programs.

A data analysis concept that is consistent with these criteria is comprised of the following tenets. The analysis should be:

- Comprehensive -- by including all HMDA-reporting institutions in the area.
- Areawide in scope -- by ranging from a regional perspective of investment to a local (such as neighborhood) focus.
- Structured for relative comparisons -- by considering HMDA data in relation to other data.

At first glance this may seem like a major undertaking. It need not be. The size of the project will, of course, depend on the size of the metropolitan area and the number of financial institutions. In any case, the value of possible outcomes can be sizeable. Costs will be discussed in a later section, but the reader should keep in mind that this is not automatically a massive effort.

### THE IMPLEMENTING ORGANIZATION

Areawide '701' planning organizations are ideally suited for undertaking a HMDA analysis project with the above objective, performance standards and design criteria. The perspective of the '701' organization is inherently areawide or regional in scope and comprehensive in approach; it is experienced with data sources, methodologies and data processing; and it has a legitimate areawide planning role. On this basis, the HMDA

analysis project, and its potential spinoff products, can become a new phase in the evolution of HUD '701' comprehensive planning.

Most importantly, the '701' agency is usually a relatively neutral influence in the context of local organizations and interests. Its areawide orientation transcends the milieu of local self-interests, although it may be biased toward the public sector. This neutrality, coupled with technical experience and resources, is conducive for producing a "convincing and comprehensive analysis" with "objective information" and for establishing working relationships with the various organizations and interests involved with residential maintenance and community development. The established links which the areawide planning organization has with local units of government and programs, such as Community Development Block Grant, represent ready avenues for implementation.

Lastly, the network of '701' agencies represents a mechanism for statewide annual continuity of data which is particularly significant for financial institution regulatory agencies (as they are organized in state-grouped regions) and for state-level monitoring of community development.

#### DATA ANALYSIS DESIGN CONCEPT

It was stated above that HMDA data analysis should be comprehensive areawide in scope and structured for relative comparisons. Each of the recommended specifications will now be discussed in detail.

##### The Analysis Should be Comprehensive

A comprehensive analysis includes all HMDA-reporting institutions with offices in the county or region and documents residential investment



in terms of each political subdivision of that area. For example, in analyzing investment in the Cleveland region, all HMDA-reporting institutions (38) with an office in Cuyahoga County, Ohio (which contains the city of Cleveland) are included, and data are compiled for each of 60 units of government within the county (38 cities, 18 villages, 4 townships). In this way, all interested parties have the complete picture: all facts for all institutions and all communities are on the table at the same time. All institutions and communities are considered equally. None is singled-out, none is excluded.

Most significantly, this comprehensive analysis makes possible the computation of one institution's "share of the market," which is a most important statistic, possibly the most significant way of expressing an investment pattern (which will be discussed shortly).

### The Analysis Should be Areawide in Scope

An areawide analysis ranges from the broad, regional perspective to the community or neighborhood level to the individual census tract. This range in scope is important because each level represents a major component of the total investment picture. It is important to know investment patterns in the broadest sense and in the sharpest detail possible.

With respect to the "big picture," for example, one can ask: What percentage of total dollars invested (in a given year) in conventional 1-4-family mortgages by the financial institutions of Cuyahoga County went into the city of Cleveland? (in 1977, 6.7%). The suburbs of Cuyahoga County? (43.3%). Outside the County? (51.0%). The same questions can

The "little picture," census tract level, provides the detailed description of investment in neighborhoods or subareas of communities. This detail gives the extent of involvement of each institution in each subarea. It also makes possible focused investment planning and monitoring.

### The Analysis Should be Structured for Relative Comparisons

HMDA data become particularly valuable and useful when considered in relation to other data or information. For example, knowing that a given bank originated 122 1-4-family conventional mortgage loans in the city of Cleveland in 1977 does not by itself mean a great deal. But that is what financial institutions report to the public: the number of loans made, by census tract (and in this example, the 122 was arrived at by totaling the bank's reported figures for all census tracts within the city of Cleveland).

The key in making the most use of HMDA data is to make them relative to compare the 122 mortgage loans with some other figure so that the result is a measure of something that is credible, convincing and useful.

A number of comparisons are employed in the analysis design presented in this guidebook. They may or may not be the best or most effective for a particular city or area. They are offered to the reader as examples, and the reader is encouraged to modify or devise new ones on the basis of local conditions and opportunities. Whatever comparisons are selected, however, they should be valid and uncomplicated. It is better to begin using HMDA data in sound, uncomplicated ways so that results can be easily understood and accepted as objective facts. More complicated or ambitious

There are two ways HMDA data can be used in comparisons: the first involves comparing HMDA data with HMDA data; the second involves relating HMDA data with other information such as real estate sales and/or census demographics.




HMDA Data in Relation to HMDA Data. The minimum (but highly significant) use to which HMDA data can be put is to compare one bit of HMDA data to another. Returning to the example of the bank with its 122 1-4-family conventional loans originated in the city of Cleveland in 1977. On its own, that figure of 122 does not mean much, but a comprehensive analysis involving all lenders shows that the 122 loans represented 2.4% of all the conventional loans made by HMDA-reporting institutions during that year. This percentage--the "market share"--indicates the extent to which the institution was involved in this type of financing in the city of Cleveland for that year.

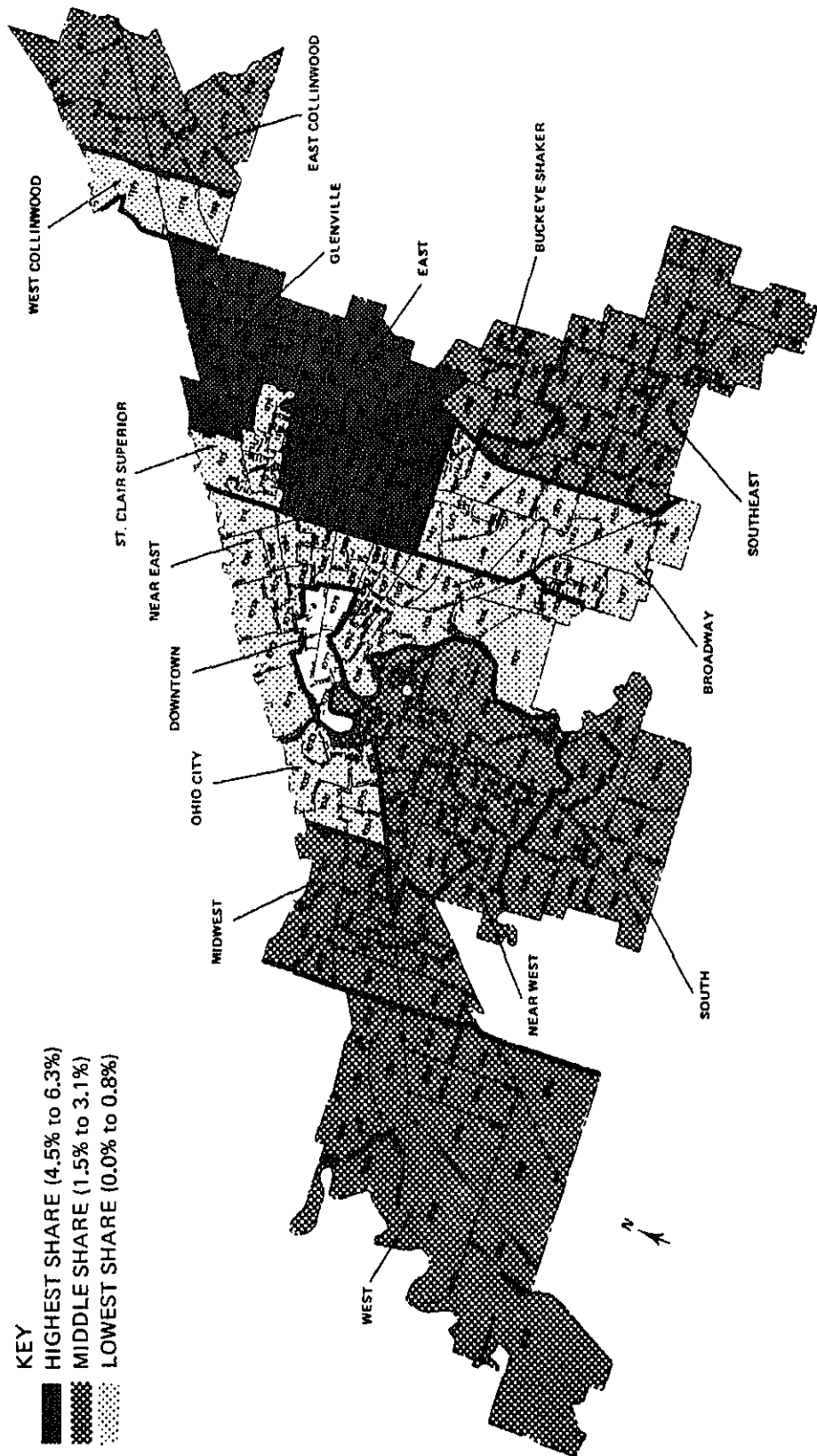
With the aid of the computer programs discussed in this guidebook, the bank's share of, or involvement in, the conventional mortgage market in each census tract of the city--or in groups of tracts representing neighborhoods--can easily be determined. In 14 Cleveland neighborhoods the bank's involvement in 1977 ranged from 0.0% to 6.3%. The geographical distribution of these percentages, which can be mapped for more effective communication, constitutes a lending pattern (Figure A). The same can be done for any combination of institutions--such as all banks, or all banks with offices in a particular district.

The market share held by individual institutions or groups of institutions (and consequent patterns) is critical information for the summary

# BANK H SHARE OF CONVENTIONAL MORTGAGE MARKET BY SUBAREA CITY OF CLEVELAND - 1977

## KEY

-  HIGHEST SHARE (4.5% to 6.3%)
-  MIDDLE SHARE (1.5% to 3.1%)
-  LOWEST SHARE (0.0% to 0.8%)



of community development and maintenance. The percentages tell a community which institution was most involved in the community, which was least involved and those between. On the basis of this ranking, for example, a local unit of government can construct a formula (as one has done in the Cleveland area) for "rewarding" the more involved institutions with larger deposits of municipal funds.

Market share percentages also tell financial institutions what their degrees of involvement were in relation to each other. Chances are that most institutions do not otherwise know that information. Before HMDA, there was no practical way for them to know.

Market shares, however, indicate nothing about what the degree of involvement in a community "should" have been, or why it was as it was or what it could be. An institution's market share pattern needs to be examined in relation to the location of its branch offices, its size and type (commercial bank or thrift). The role of commercial banks, for example, is primarily to provide financial services to businesses and industries. Their share of the residential mortgage market, therefore, is bound to be small in comparison with their size (as measured by deposits held), but their involvement in a community through business loans might be high.

Another factor could be the local history of customer relationships with financial institutions. For example, there are neighborhoods in the city of Cleveland where it would be difficult for commercial banks to increase their market shares because of the long history of residents using savings and loan associations.

Thus, a market share percentage simply states that "given what lending occurred by HMDA-reporting institutions, this is the portion attributable to a particular institution or a group of institutions." Nonetheless, market share patterns--annually documented--clearly reveal which financial institutions are operating where and to what extent. These patterns can readily serve as the starting point for institutions on their own initiative to evaluate and possibly attempt to alter a pattern--or for the public to raise questions about the reasons for or implications of existing patterns.

Market share is one example of how HMDA data can be used on its own without employing other data. Another example is "an institution's share"--that is, the 122 conventional mortgage loans made in the city of Cleveland in 1977 by the bank referred to above represented 20% of the conventional loans the bank made in the county as a whole. For four other major commercial banks, the figures were 17%, 16%, 12% and 7%. On this basis, institutions can be ranked in terms of the portion of their mortgage lending program committed to a particular community.

If it is not possible for an organization undertaking a HMDA analysis to do more than the compilations and comparisons described above, it will have accomplished a great deal. It will have documented the overall distribution of residential investment for its area, and the part each institution plays in that investment. The significance of HMDA data, however, can be greatly enhanced when analyzed in relation to other data

HMDA Data in Relation to Real Estate Activity. A basic issue under

is the extent of involvement in real estate activity by financial institutions as expressed through conventional mortgage lending.<sup>3</sup> (A conventional loan is an ordinary mortgage loan as distinguished from an "unconventional" government-secured loan, i.e., FHA-insured or VA-guaranteed.) The issue stems from problems which have come about in neighborhoods (typically central city) where large numbers of government-backed home purchases occurred.<sup>4</sup>

FHA/VA buyers in central cities and inner suburbs often enter home ownership with negligible savings, if any. Their income places them on the edge of default; they often have little margin for home maintenance--which can be calamitous when the property is in need of repair to begin with. Experience has shown that defaults and foreclosures are increasingly probable. Communities and neighborhoods become unstable when they contain an excessive percentage of home owners in a marginal economic situation.

The question of what constitutes an "excessive percentage" is beyond the scope of this guidebook. Nonetheless, the issue is a matter of balance--and the pivotal point may be a community's (local government's) capacity to deal with foreclosed and vacant properties. When foreclosures get out of hand, beyond the capacity of the community to manage the problem (such as by purchasing vacant properties, rehabilitating them and selling), then the community is caught in a vortex of deterioration and flight.

In urbanized areas, foreclosure rates are closely related to the extent of government-secured lending. Most institutional lenders (banks and thrifts) appear to engage relatively little in the origination of FHA/VA loans (although many may be indirectly involved through secondary

investment). Such lending is the specialty of mortgage bankers and companies, some of whom have been alleged to foreclose at the first opportunity. (In the first quarter of 1979, the national FHA foreclosure rate for mortgage banking companies was 5.45%, while for savings and loan associations it was 0.67%.) Thus, where institutional lenders are less involved, mortgage bankers (and government-secured lending) are more involved.<sup>4, 5</sup>

A measure of this split in involvement would, therefore, be a key indicator of the stability of a residential area. A community where institutional, conventional involvement is high and steady year after year is very likely to be stable; where involvement is low, the community is likely to be badly deteriorated and distressed; where it is increasing, it is undergoing revitalization and gaining in economic strength and stability; and where it is decreasing, the community is probably unstable and deteriorating.

This is not to suggest, as was emphasized earlier, that financial institution investment in residential properties is the simple cause of community stability. The condition of any community is the result of many factors--one of which is the level of conventional mortgage investment. The point is that the level (high, low, increasing, decreasing) is a valid measure, after all factors (including investment) have had their effect on the present and likely future condition of the community.

This important indicator can be produced as follows: HMDA data give the total number of conventional mortgage loans made in a community during a calendar year by a financial institution. If the total for all insti-



sales (or deed title transfers) that occurred in the community for the same year, then the comparison is a statement of the extent to which financial institutions, as a group, were involved in the real estate activity of that community for the year.

The comparison can be expressed as a ratio of loans-to-transfers, or the "L/T ratio." For example, if a total of 150 conventional loans was reported by all institutional lenders in a community during 1977, and 200 deed transfers occurred during that year, then the L/T ratio was 0.75. The 25 deed transfers unaccounted for by conventional loans could have been financed through other sources such as mortgage companies, credit unions, insurance companies, land contracts--or had no financing, i.e., cash sale. In any case, the L/T ratio is a direct measure of the involvement of institutional lenders through conventional loans, and an indirect measure of the involvement of mortgage companies through government-secured lending. This can be confirmed, short of delving into county mortgage records and noting the financing agent for each mortgage, by obtaining HUD records of the number and census tract location of properties insured by FHA in a given year, and comparing the pattern with the pattern of L/T ratios. Figures B and C show these patterns for Cuyahoga County, Ohio, for 1977. Generally, where involvement of institutional lenders through conventional loans was low (low L/T ratio), the extent of FHA-insured lending was high (as was, therefore, the involvement of mortgage companies).

(This comparison would be enhanced by the inclusion of VA-guaranteed loans, but unfortunately the Veteran's Administration is not required under the Home Mortgage Disclosure Act to make this information available





Also, VA currently does not record census tract information on the mortgages it secures.)

An actual example of a city's L/T ratio pattern is given in Figure 1. In 1977, 14 city of Cleveland neighborhoods had ratios which ranged from 0.26 to 0.95. At the census tract level, ratios ranged from 0.0 to 2.0. The lowest ratios were in the economically weakest neighborhoods, and 83% of the tracts with ratios less than 0.5 contained non-white populations of at least 25%.

The L/T ratio for the 59 suburban political subdivisions surrounding Cleveland within Cuyahoga County ranged from 0.44 to 2.36. (The reason for numbers greater than 1.00--i.e., more loans reported than deed transfers occurred--is that lenders include in their loan count first lien refinancing of existing loans. If such loans were not reported, leaving only property purchase mortgages, then no ratio would be greater than 1.00. The fact, however, that refinancing loans are included does not diminish the significance of the ratio. The higher the ratio, even if greater than 1.00, the more involved were institutional lenders.)

Seven of the 59 suburbs had L/T ratios less than 1.00, six of which were in geographic areas where the greatest degree of suburban racial change had been occurring over the previous decade. The suburb with the lowest L/T ratio (0.44) had the highest percent of non-white population (79%), and the suburb with the second lowest L/T (0.75) had the second highest percent non-white (62%).

Even without multi-year documentation, it is reasonable to assume that suburbs with ratios less than 1.00 had, in previous years, possessed

# RESULTS OF INVESTMENT BY 38 INSTITUTIONAL LENDERS FAMILY MORTGAGES: CITY OF CLEVELAND - 1977

■ L/T GREATER THAN .74 (HIGH)

▒ L/T FROM .50 TO .74 (MODERATE)

▓ L/T FROM .25 TO .49 (LOW)

□ L/T LOWER THAN .25 (VERY LOW)

NO LOANS MADE

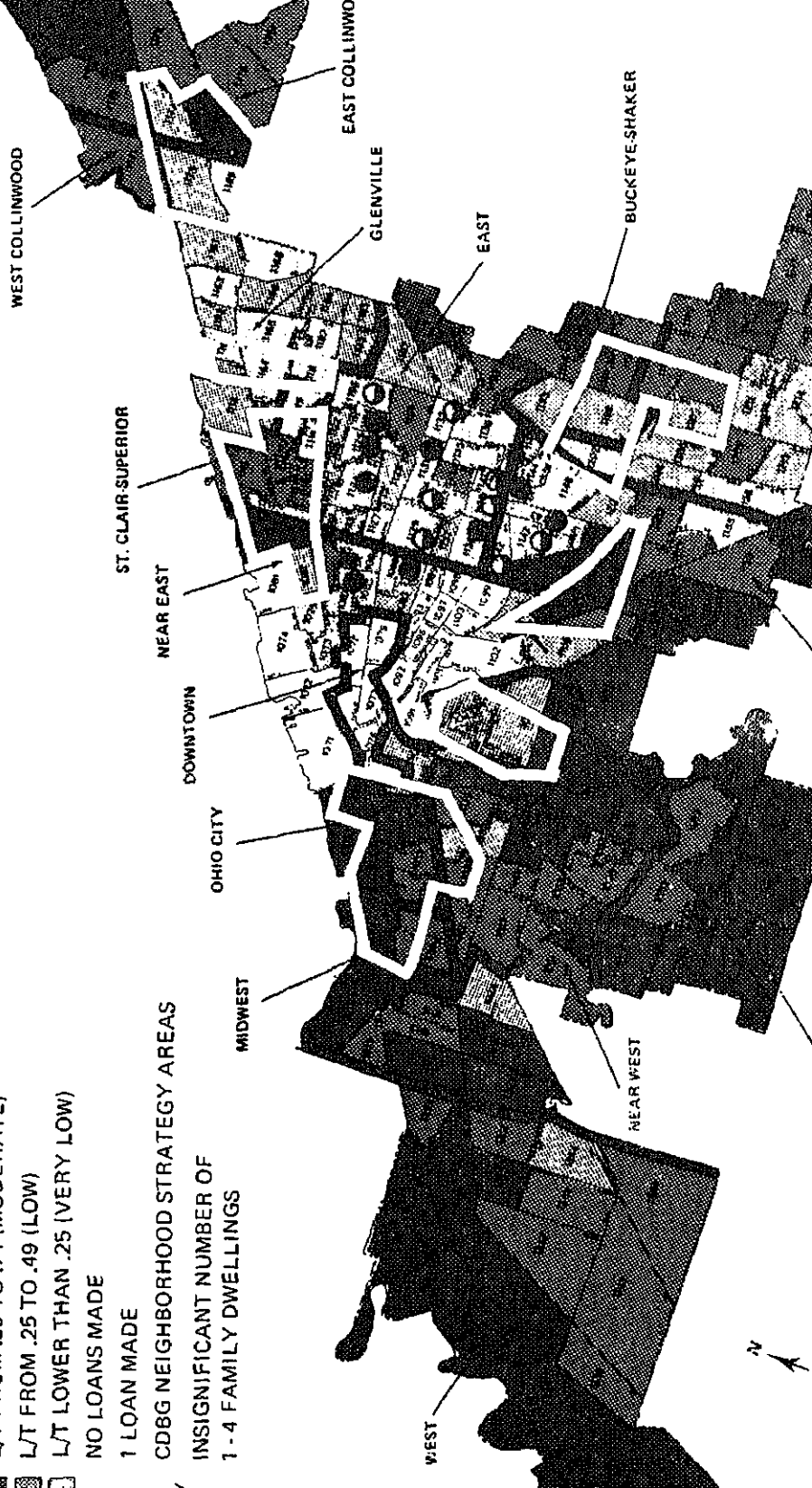
1 LOAN MADE

CD8G NEIGHBORHOOD STRATEGY AREAS

INSIGNIFICANT NUMBER OF

1 - 4 FAMILY DWELLINGS

L/T = MORTGAGE LOANS MADE  
DEED TRANSFERS RECORDED



began to integrate racially in 1970, has compiled documentation (from mortgage records) on actual changes in levels of conventional and government-secured lending. The evidence shows marked drops in conventional lending and increases in FHA/VA loans (along with increases in foreclosed, vacant properties) until 1975 when the local community congress and city administration began to discuss the situation with lenders and real estate firms serving the city. Programs to halt the decline and achieve a manageable balance between conventional and government-secured lending were mutually devised and implemented. In 1975 the L/T ratio was 0.70; by 1977 it had risen to 1.00. (For an example of a program designed to increase levels of conventional mortgage lending, see the publication referred to in footnote 1, pp. 59-63, where the "Philadelphia Mortgage Plan" is discussed.)

A drop in an L/T ratio immediately raises the question, Why has it happened? Documentation of the drop provides local officials, community organizations and lenders with the basis for seeking an answer. An L/T ratio less than 1.00 identifies for lenders an area of "market potential," an area where they made fewer conventional loans than there were sales. The difference between the two figures constitutes loan-making potential. Figure E is an example of how market potential can be formulated by comparing HMDA-reported loans to property transfers, and how a relatively small shift in overall investment distribution could make an enormous difference for a city.

The lower the existing L/T ratio, however, the more difficult it would most likely be for lenders to increase their involvement since the number of potential buyers and properties meeting acceptable underwriting standards

**FIGURE E**  
**MARKET POTENTIAL, CITY OF CLEVELAND - 1977**

- In 1977, 7,402 residential properties sold in the city of Cleveland and 5,133 FMDA loans were reported. The difference of 2,269 represents market potential.
- Assume half the potential 2,269 buyers (1,134) would have qualified for a conventional loan, and assume they could have been "found" by FMDA-reporting lenders through marketing and promotional activities.
- Assume the average loan on the 1,134 properties would have been \$17,000 (The average of 5,133 loans made in the city by FMDA lenders was \$22,000).
- With the above assumptions, the total principal on the 1,134 properties would have been \$19.3 million.
  - \$19.3 million represents:
    - 8.5% of total bank investment outside of Cleveland
    - 1.3% of total S & L investment outside of Cleveland
    - 1.1% of total investment outside Cleveland
- Thus, a very small shift (1.1%) in overall investment distribution would have made a major difference in the city of Cleveland (and institutional lenders would have increased their market share in Cleveland by 16 percentage points--from 69% of all sales to 85%).
- What could be done in Cleveland with a 5% shift?
  - A 5% shift from outside Cleveland to Cleveland would make available \$85 million, and could finance:
    - 1,000 combination mortgage (\$15,000) and rehabilitation (\$7,000) loans.
    - 9,000 rehabilitation loans at \$7,000.

(Cleveland's Housing Assistance Plan states there are 65,000 substandard but rehabable units in the city.)

would also be smaller. The lower the L/T ratio, the higher the need is likely to be for government subsidies to alleviate excessive risk for institutional lenders.

In summary, a pattern of L/T ratios can serve as an administrative and managerial tool in the process of community development and maintenance for local governments, community organizations and lenders. With this tool:

- Loan and real estate marketing programs can be more effectively targeted,
- The earliest signs of community erosion can be identified,
- Progress in community maintenance or revitalization can be immediately documented,
- Joint public/private efforts can be more effectively planned and implemented. (This point will be discussed at length in a following section.)

A second use to which property deed transfer data can be put is in the calculation of annual property "turnover rates" for communities. The turnover rate is the percent of total properties in a community which sold in a year. Turnover rates can be calculated by dividing the number of single-family property deed transfers that occurred in the area by the number of single-family properties (obtainable from the U. S. Census of Population and Housing, or a local count).

The turnover rate, in addition to the L/T ratio, is an indicator of community stability. Knowledge of local conditions and trends is necessary, however, to interpret turnover rates properly. A very stable affluent suburb could have a low rate; so, too, could a central city neighborhood which has deteriorated to the point where sales are negligible.



integrating neighborhood where real estate agents were promoting panhandling.

The creation of these tools, the L/T ratio and turnover rate, depends on the availability of property deed transfer data (by census tract or address which can be assigned a census tract). County government offices have this information, and for large cities it should be obtainable in machine readable form. If not, there may be other sources, private organizations, such as title companies or real estate data services. If data are not available in machine form, then the reader may wish to consider a study design which requires deed transfer data for subareas where the numbers involved would be within range of a manual count. (Data obtainment is discussed in Chapter 2.)

HMDA Data in Relation to Public Sector Investment. The above discussion of market shares and the L/T ratio shows how HMDA data can be used to create managerial and administrative tools which lenders alone, or lenders with elected officials and community organizations, can use to plan, manage, coordinate and monitor residential investment. With these tools, a more rational, businesslike approach to investment in areas where involvement is low or declining becomes possible. As lenders begin to recognize this possibility, along with the possibility that they have something to gain through their increased involvement, then attitudes can begin to shift from negative to positive. In the hands of a lender whose attitude is one of "let's see what we can do," data otherwise used to accuse lenders become data for market development and more effective managerial performance.

The pinnacle application of these tools and HMDA data is in linking private sector investment with that of the public sector.

Federal programs--public sector investment--which provide housing and community development assistance to distressed urban areas have come about partly because of the inherent tendency of economic institutions and organizations, operating within a free enterprise system, to move toward more secure, profitable markets and away from markets where profits are judged not to be worth the costs or risks involved. Financial institutions for example, can express this tendency not by explicitly redlining an area but by not actively (or to use a key word in the CRA regulations, "affirmatively") seeking to invest in an area.

Federal programs have in effect been attempting to compensate for, and mollify the consequence of, this tendency; to fill the vacuum created by the absence of private sector organizations.

Any proposal that would have financial institutions increase their investment in risky areas goes against the grain of this tendency. At some point, it goes not only against the grain but against economics. That is the point where investments cannot be made profitable. Thus, the more economically distressed an area, the more public sector investment is likely to be needed to reduce risks or subsidize costs for financial institutions.

HMDA data can be used to facilitate considerations and actions which go against the grain of economic instinct by building risk-reducing linkage between public and private investments. This can be accomplished by combining the two data components into a single investment picture and then using that picture for planning and program management.

The public sector component would include all capital investments and physical improvements recently made or planned through local, state or

federal programs. This information can be obtained from Community Development Block Grant applications and grantee performance reports (which identify projects, planned and accomplished, by census tract) and from annual municipal and county capital improvement programs. In addition, the picture should include investments made or planned through special housing rehabilitation programs that might be operating in a neighborhood or community, such as Neighborhood Housing Services or a non-profit development corporation. By tallying the two components and placing them side-by-side, the initial step of simply recognizing the dimensions of the present situation can be taken. For example:

In the St. Clair-Superior and Glenville (adjacent) neighborhoods of the city of Cleveland, on the private side of the ledger, institutional lenders collectively invested \$1.4 million in residential properties in 1977 (mortgage and home improvement). Their involvement in the mortgage market was low: 157 conventional loans compared to 476 deed transfers. (St. Clair had an L/T ratio of 0.45; Glenville, 0.26.) But 27 of the county's 38 HMDA-reporting institutions made at least one loan. Although the L/T ratios were quite low, it was not a case of zero involvement by most institutions.

Each lender made its investment without the knowledge of what the others were doing, or of what the total picture was, or of what the local government, the City of Cleveland, was planning--which was to invest (through the Community Development Block Grant Program) \$12.3 million (over three years) in housing rehabilitation assistance and street improvements.

As one S & L executive put it:

Coordination is absent; fragmentation is abundant. Financial resources are scarce and they are scattered across the landscape.\*

In this example, the facts, once compiled into a single picture and commonly shared, form a new basis for considering and planning investment. The facts alone could cause some lenders to reassess their evaluation of the neighborhoods; and the extent of public sector investment along with the large number of lenders (27) already involved could motivate lenders to become more active in marketing investment in the neighborhood-- particularly in light of the 319 deed transfers that did not involve a loan from a HMDA-reporting institution. The 319 represents market potential. If half the home buyers represented by those transfers could have qualified for a conventional loan, and if they could have been "forced" through affirmative marketing programs, the lenders could have doubled their business.

Most importantly, joint consideration of public and private investment can lead to coordinated planning and program development. Decisions by each sector can be made to reinforce the other. A neighborhood where the L/T ratio is shown to be declining can be given special investment attention by both sectors. Or the two sectors can propose an Urban Development Assistance Grant program which would provide mortgage assistance to home buyers in neighborhoods (or particular census tracts) where the L/T ratio shows private investment to be marginal. Joint monitoring of loans and real estate activity would then provide objective documentation of progress

HMDA Data in Relation to Demographic Data. The fourth use of HMDA data in relative comparison is with demographic information, the major source of which is the U. S. Census of Population and Housing. It is possible to compare the lending pattern of an institution (or group of institutions such as all commercial banks) with census tract patterns of race, income and age of dwelling as given by census tables. Such a comparison may show, for example, that relatively few housing loans were made by HMDA-reporting institutions in tracts with high percentages of minority residents. On the basis of this documentation, lenders could then examine their marketing and customer service procedures to determine if adjustments are called for.

The objective of most HMDA analyses conducted to date has been to prove the existence of prohibited, discriminatory lending practices. The principal prohibitions that apply through federal law to both commercial banks and savings and loan associations are: lending practices which are based in any way on race, color, religion, national origin and sex. Savings and loan associations are also explicitly prohibited from making loan decisions on the basis of the age or location of a dwelling. In addition, all institutions are held to have an affirmative obligation to help meet the credit needs of their local communities, including low- and moderate-income neighborhoods.<sup>6</sup>

It should be noted, however, that the public is severely limited in what it can accomplish in the way of proofs because of the limited availability of factual data. A report on the implementation and use of HMDA, which was prepared for federal regulatory agencies, states:

...proving redlining or discrimination requires knowledge of the demand for loans. Both redlining and discrimination can only occur when demand for loans in some form exists. That a [HMDA] disclosure statement indicates that no loans were made in an area does not, by itself, establish the presence of either redlining or a discriminatory lending practice because of the possibility that either no loans were requested or those requested were denied on legitimate grounds of safety and soundness. Furthermore, the fact that loans were requested in an area and not made does not prove discrimination because discrimination is established only when it is shown to be directed against the characteristics of individual loan applications. Only by establishing that an individual was denied a loan or given less favorable terms because of a prohibited basis (e.g., race, location of dwelling, national origin, etc.) can the presence of redlining or discrimination be demonstrated. Thus, an analysis of data on demand showing differential treatment predicated upon a prohibited basis is needed for a finding of redlining or discrimination.<sup>7</sup>

The same report goes on to say:

...the public can use HMDA data to detect a differential pattern of lending among census tracts which may indicate the need for further investigation [by federal regulatory agencies] to determine if an institution has violated certain of the compliance requirements. The public cannot prove that these differential patterns of lending...actually derive from redlining or discrimination because they do not have access to data on the demand for loans in the areas or for the populations that appear to be underserved.<sup>8</sup>

The public has no way of knowing the extent of the "demand for loans. Only financial institutions and their regulatory agencies have access to that information. Limited, however, as the public is, it still can define lending patterns in relation to demographic data which may argue strongly for investigation and response by lending institutions and their regulatory agencies. And, of course, the L/T ratio can be used as an indicator of "demand potential" if not demand itself. The difference between the 476 deed transfers in the St. Clair-Superior/Glenville neighborhoods (with

potential of 519. A lot of fear could result. But financial institutions had no part--and maybe they could not have. But on the other hand, possibly through more vigorous marketing activity they could have.

## OUTCOMES AND USERS OF HMDA ANALYSES

A comprehensive, areawide analysis of HMDA data, involving relative comparisons, enables a wide range of users to provide a significant number of outcomes--particularly if the analysis is done annually to document change and trends. Outcomes can be immediate and specific or more long-term with systemic impact. Examples of the former are as follows:

### Immediate Outcomes

- Financial institutions and the local government can coordinate private and public investment plans and programs using documentation of investment and L/T ratio patterns as planning and monitoring tools. Special programs can be jointly designed and targeted to specific census tracts and neighborhoods where the L/T ratio (institutional involvement) is shown to be declining or marginal.
- A single financial institution can review its investment and market share patterns in relation to those of other institutions, and to a city's pattern of market potential (as expressed by L/T ratios), and revise its marketing strategy accordingly.
- A group of lending institutions can form a "service corporation" through which they would share staff expertise, resources and risks for attempting to increase central city investment. Investment programs would then be designed and coordinated on the basis of various facets of the HMDA analyses--such as the extent of present involvement by each institution in neighborhoods and subareas; the existing share of the market held by each institution; the pattern of L/T ratios across the city (certain census tracts could be targeted by certain institutions, and tracts of lower L/T ratios could be shared as targets to distribute risk).

- A local unit of government participating in the Community Development Block Grant Program can review its strategy and program distribution in light of HMDA investment patterns.
- A local unit of government can deposit its municipal funds with financial institutions on the basis of each institution's support for the city. (It should be noted that commercial banks can support a city in a number of ways, one of which is residential investment. Other ways include, business loans, large and small, and municipal bond purchase. The role of thrift institutions is virtually limited to residential investment.)
- Fair housing organizations can examine lending patterns for indications of discriminatory lending practices, and/or use analyses to identify and support lenders most active in furthering integrated housing patterns.
- Special housing programs, such as Neighborhood Housing Services, can use the HMDA analysis to evaluate program progress in relation to investment in other neighborhoods or communities.
- Community organizations and federal regulatory agencies can use the analyses in the examination of financial institution performance under the Community Reinvestment Act.
- Members of the public can use the analyses to evaluate residential investment programs of individual institutions and then deposit personal funds accordingly.

### Longer-term Outcomes

- Representatives of financial institutions and a local government can jointly review investment patterns (both private and public) for the purpose of defining longer-term investment issues, policy options and strategies for managing urban change.

This outcome can be particularly significant because of the magnitude of the problems and issues affected, and warrants some elaboration.

A HMDA analysis employing L/T ratios can raise questions concerning policy and program implications stemming from a city's pattern of ratios. Where ratios are high, indicating economic strength and stability, the objective would be, of course, to keep them high. The action program would



involve annual monitoring, and should any decline in ratios occur, immediately investigate for reasons.

Areas with moderately high L/T ratios would be natural targets for public/private investment coordination. Such areas would most probably be viewed as "basically sound," with significant but not irreversible deterioration. These areas could be Neighborhood Strategy Areas in a city's CDBG program; they probably would be the first choice for those financial institutions looking to increase their central city investment.

That leaves areas with low L/T ratios. Here deterioration would be expected to be at its worst; conventional lending non-existent or nearly so; "bankable" buyers and qualified properties would be rare. Without an influx of at least moderate-income buyers with resources to rehabilitate and maintain properties, such areas would probably undergo widespread demolition.

A HMDA analysis employing L/T ratios directs attention to the problem of low ratio areas, for if moderate ratio areas have not reached the point of irreversible deterioration, then by implication low ratio areas have. If so, and if new levels of public/private coordination have the effect of preventing moderate ratio areas from slipping into irreversible deterioration, then questions concerning low ratio areas come to the surface--such as:

- Where in the longer-run will people currently living in these areas live?
- Might there be a point in the future when the paucity of population would make the provision of municipal services difficult to justify economically?

- If few of the existing properties can be maintained, and demolition of most is inevitable, what might be the future land re-use?
- What would be the most constructive social and community process for moving from the present situation to future land re-use?

The unusual opportunity created by this particular use of HMDA data is that the analysis can open the door to questions such as these and to the possibility of elected officials, community leaders and citizens coming to grips with this most intractable of urban problems. The starting point would be in establishing the reality of the situation, and the L/T analysis provides a numerical (as against an emotional) basis for this to happen. Elected officials, executives of lending institutions, and other community leaders can review the L/T ratio picture for their city and then formulate community management policies and strategies that are appropriate for each segment of that picture. If these policies and strategies can be made to encompass all major interests, then the entire community will have a shared concept of its future direction.

- Comprehensive HMDA analyses can affect the performance of the entire housing delivery system.

A second longer-term outcome of a HMDA analysis concerns possible impact on the local housing delivery system. Institutional lenders are members of a group of organizations which together comprise this system. Besides lenders it includes real estate companies and brokers, real estate appraisers, developers, mortgage bankers, mortgage companies, builders, real estate insurers and the federal government as represented by HUD-FHA and the VA.

The principal characteristic of a system is that members are inter-related: each can affect others and in turn be affected; change in one part of the system has consequences for other parts; the functioning of each member depends on one or more other members. Because financial institutions are affected by the Home Mortgage Disclosure and Community Reinvestment Acts, it is possible for some of that effect to be transmitted through financial institutions to others in the housing system. This can happen in the following manner:

The CRA holds financial institutions responsible for demonstrating that they are fulfilling their continuing and affirmative obligation to help meet the credit needs of their communities, including low- and moderate-income neighborhoods (consistent with safe and sound operation of such institution). But financial institutions are dependent on the performance of other members of the system for fulfilling that responsibility. For example, if real estate brokers were to encourage prospective home buyers (looking to buy in a particular community) to go to mortgage bankers for financing rather than institutional lenders, then it would be difficult for the CRA-regulated lenders to demonstrate performance in that community. In response to this situation, and the pressure created by CRA (for involvement in a CRA compliance can be quite costly), lenders could actively solicit the assistance of other members of the housing system for the purpose of fulfilling their CRA obligation. For example:

The comprehensive analysis of 1977 HMDA data for the Greater Cleveland area showed that involvement of financial institutions in a particular group of suburbs southeast of the city of Cleveland was significantly lower than

had been experiencing a steady increase in the number of minority households. A civic coalition representing one of the suburbs responded to the documentation by organizing a "home financing seminar" for real estate brokers and associates. The seminar was co-sponsored by three financial institutions, each of which had been involved in a CRA complaint (not originated by interests from the suburb). The lenders' purpose in holding the seminar was to promote their institutions and services to the brokers.

The dynamics of that situation appeared to be these: CRA had placed the three institutions in a vulnerable position; L/T ratios had shown that the 38 financial institutions in the county were collectively less involved in that particular group of suburbs than any other; there was no apparent, readily acceptable reason why that lower involvement should be the case (the suburbs were not low-income); and because of exposure given the three institutions through the CRA complaints, they were willing to meet with another component of the housing system and discuss lending programs and services.

Depending on the degree of CRA-induced pressure placed upon financial institutions, or the degree of internally generated resolve, the institutions could give strong encouragement to other organizations in the housing system to change some ways of operating. For instance, if institutional lenders do indeed tend to become less involved in racially integrating communities because minorities are inclined to purchase homes through real estate brokers who have established relationships with other sources of financing, then lenders could meet with those brokers and discuss advantages in promoting institutional borrowing to their clients. Institutional

racially integrating communities (and presumably more involved in non-integrating communities) and discuss advantages in modifying their business practices. And lenders could also meet with elected officials and civic leaders to discuss any decline in institutional lending, along with possible consequences of that decline, and point out the importance of cooperative effort to arrest the trend.

The outcome of such efforts could well be that institutional involvement (in the form of conventional mortgages) is maintained or increased, and federally-secured lending is kept to a level where the local community and its elected officials are better able to handle foreclosures and properties in need of repair. In this way HMDA analyses which document institutional lending patterns can affect the performance of the housing delivery system.

## IMPLEMENTATION

Comprehensive, areawide analyses of HMDA data will result in reports and reports often go no further than a filing cabinet or a dusty shelf. A HMDA analysis, however, properly structured and presented, is not likely to suffer a dusty fate. HMDA information is of interest to many parties.

Implementation and use of reports will depend upon the approach taken to the project and upon the handling of findings in particular. For example, if project staff assumes that lending institutions do redline neighborhoods (no matter what lenders say) and that redlining is the cause of neighborhood deterioration, then the HMDA analysis and report will in some way reflect that outlook and affect different users differently.

Lenders would probably react defensively and try to keep as much distance as possible; neighborhood organizations would probably seize on the matter and use it to castigate lenders.

The point here is not to judge a frame of mind, but to emphasize that whatever it is, it will shape outcomes and that staff have choices to make on how to present analyses and findings. The range of choices is broad and beyond the scope of this guidebook. Within the scope, however, is the particular implementation concept which is meant to be consistent with the approach and design given in this guidebook. This concept is based upon the role and position of an areawide planning organization and could be readily adopted by planning and development departments of local units of governments.

### Implementation Concept

The ultimate objective of this approach is to produce objective implementation and managerial tools--businesslike analyses and information which support increased involvement by institutional lenders in areas where involvement currently is low or declining. In addition, project products should serve to draw together, into shared perspectives, goals and programs, all interests involved with residential maintenance and development. This requires that the implementation process be guided by several principles:

Reports should be statements of fact. The starting point in the use of HMDA data should be the basic facts. Analyses and findings should be presented for what they are: statements of fact, objective information.

be limited to clarifications of factual points which can be supported by the data presented. Speculations or conclusions as to motives, attitudes or internal practices of lenders cannot be substantiated by HMDA data and would be out of place in this approach.

Facts do and will speak for themselves, and an analysis that is technically sound and structured to produce credible relative comparisons will meet the prerequisite conditions for use and action. Many actions and uses will result simply from publishing the basic information; other outcomes will require cultivation.

All interests are considered equal. As indicated earlier, the concept underlying this approach assumes the position that the rise and fall of neighborhoods is the end result of influences stemming from a number of sources--one of which is financial institutions and their investment. No one source is singularly responsible; each has its own particular responsibility, and in that respect all are more or less equal.

Consistency with this position requires that HMDA analyses and reports be conducted free of advocacy for or against any particular interest--particularly if a goal of the analysis project is to help draw together all interests into shared perspectives, goals and programs.

Continuity of Effort Produces Maximum Benefits. The best of payoffs in neighborhood or community maintenance and development come through continuity of effort. Increased institutional involvement, expanded collaboration, greater acceptance of personal and institutional responsibility, changes in the housing delivery system--all require continuity of

effort through an evolving process. This means that HMDA data analyses need to be annually performed and reported, and that two years or more might be required to develop the basic understandings and orientation required to make full use of findings and tools.

The annual documentation could easily become a component of a county or regional information system for planning, programming and community management--such as the Municipal Automated Geographic Information System, operated by the Washington, D. C., Department of Housing and Community Development (see Appendix C, "Resource Organizations").

### Roles of Implementors

Principal implementors of the HMDA project are project staff of an areawide or municipal planning organization and local elected officials. The role of staff in implementation is quite distinct from that of officials.

Project Staff/Planners. The prime function of staff is to produce HMDA data analyses that are technically sound, objective and structured for good, practical marketing utility. Steps that can be taken to ensure this will also serve the purpose of cultivating implementation and use of findings.

The initial task, prior to data processing, is to determine the analysis design and to articulate the rationale for that particular design (Again, the design presented in this guidebook is meant to be a starting point for other designs or modifications.) Having done that, staff is advised to offer its design, as a draft, to technical experts and users for review and comment, such as:



- Executives of financial institutions whose data are the subject of the project.
- Members of local community organizations.
- Staff of special housing programs, such as Neighborhood Housing Services.
- Key local elected officials.
- Representatives of federal and state financial institution regulatory agencies. (If the project is being undertaken in a large metropolitan area, a regional office of one or more federal agencies (such as the Federal Home Loan Bank) might be located there. In any case, all federal agencies now have staff assigned to the function of "community investment" and can be of assistance. See Appendix C.)
- Staff of municipal, county and (if the study is done by a non-APO) areawide planning departments.

The review process will expose technical shortcomings and raise points not thought of by the design staff. Of equal importance, the process of implementation will have begun with those who will use or be affected by eventual findings. They will have begun to think about and discuss the project, its possible outcomes, implications of those outcomes, etc. Project staff is advised to be involved in these discussions as much as possible, so as to understand more fully the various interests and perspectives involved in the issue of residential investment, and thus be in the best position to provide the most useful information and analyses in the most constructive fashion.

Also in the course of this process, staff can look for opportunities to introduce people who are engaged in one facet or another of community development and maintenance, but who had not had the occasion to meet. Examples would be financial institution executives and community development experts, executives from institution A and some from institution B,

a community reinvestment specialist with a Federal Home Loan Bank and one with the Comptroller of the Currency, and so on.

This linking of people who are separated by organizations, and in some cases different priorities, is an important function for staff to provide. The initiation and cultivation of such relationships takes time--but through such investment the most important payoffs will result. Again, continuity of effort, over the long haul, produces maximum benefits.

It is advisable for staff to follow the same review process once the HMDA analysis is completed and a report is drafted. This will secure technical validity and undoubtedly provide much in the way of guidance for expressing and explaining findings. The review will also have the effect of preparing users for publication of the final report.

A final point about the role of project staff/planners concerns "technical assistance." Staff should assume that the provision of technical assistance to users will be an important function during implementation. There will be users who will need explanations of various aspects of the project design, of limitations on data and conclusions, possible additional uses of data, and so on. This assistance could easily prevent misunderstandings and distortions from growing and enable constructive uses to occur that otherwise would not. Staff might also find new opportunities to link people and organizations (as discussed above).

Local Elected Officials. The role of local elected officials in the implementation process can include a number of key activities:

- Discuss with project staff the concept and design, and suggest individuals who might be appropriate reviewers.

- Initiate discussions with financial institution executives on the meaning and implications of project findings.
- Initiate discussions with financial institution executives and city planning staff on the possibilities of increasing coordination between public and private investment.
- Monitor with lenders and community leaders annual changes in investment and L/T ratio patterns.
- Create opportunities for community leaders to become involved in longer-term investment issues, policy options and strategies for managing urban change and development.

Underlying each of these activities is the unique position of the elected official; the position with a major responsibility for the well-being of the community as a whole. Within that whole, the particular self-interests of financial institutions, neighborhoods, realtors, etc., form distinct parts, which if balanced properly in terms of influence and responsibility produce healthy, stable neighborhoods. The implementation of the findings of a HMDA analysis project will be greatly aided by those officials engaged in seeking that proper balance.

#### RESOURCES AND DATA SOURCES REQUIRED

The extent of resources required to undertake a HMDA analysis project depends on the size of the metropolitan area. The larger the area, the greater the amount of data to be compiled and processed. The project that is the basis of this guidebook can be used as a frame of reference. Major data dimensions are as follows:

- The analysis involves all HMDA-reporting financial institutions whose home offices are in Cuyahoga County, Ohio (which includes the city of Cleveland). That is ten (10) commercial banks and 28 savings and loan associations. (As examples of the range in number of institutions, in 1977 there were 54 HMDA-reporting institutions in San Diego County; in Erie County, New York

(Buffalo) there were 24; in Cook County, Illinois (Chicago) 457. (The Cook County number is large because state restrictions have prevented institutional branching.)

- The 1977 HMDA reports of the 38 Cleveland institutions required 200 person/hours to code for computer card punching. The number of cards punched was 10,000, requiring 75 person/hours.
- Cuyahoga County contains a population of approximately 1.5 million within 354 census tracts.
- In 1977 approximately 30,000 property deed transfers occurred in the county--24,000 of which were residential. This information was available in machine readable form from the office of county auditor.

Staff time required to complete a first-time analysis of one year's data of the above dimensions (including additional data on financial institution deposits, FHA-insured properties and certain demographic characteristics of neighborhoods and communities) is in the order of twelve person/months (two persons for six months). Once staff gains the experience of having done the analysis, and once local data systems needed for the project are defined, then the time required in succeeding years should be appreciably less.

In all likelihood, two persons will be needed: a computer specialist (knowledgeable in SPSS or equivalent software packages), and another person who would develop contacts with users, conduct the process of technical review, write reports, make presentations, etc.

All data required for undertaking this project are readily available except possibly that of property deed transfers. If transfer data are not available in machine readable form, then that component of the project design might have to be postponed. In such case a modified design involving manual compilation of transfers for select areas should be feasible.

If transfer data are not used at all, total project time would probably be reduced by 50%. A computer is, of course, a great aid to the project, but without one, important tables and calculations can still be done manually. Specific contacts for data and technical assistance are given in Appendix C.

## SUMMARY

The Home Mortgage Disclosure Act is an unusually significant piece of federal legislation, for purposes of community development and maintenance, because of its potential to influence the flow of private sector investment capital through the local economic system.

The objective of the particular use of HMDA data presented in this guidebook is to produce managerial tools--businesslike analyses and information--which support increased involvement by institutional lenders where involvement currently is low or declining.

Achievement of this objective calls for a HMDA data analysis which is comprehensive, areawide in scope and structured for relative comparisons. Relative comparisons enable institutional market share patterns and (when deed transfers are employed) degrees of institutional involvement to be documented. The ratio of loans-to-transfers for any given area is an indicator of residential health and stability. A pattern of L/T ratios, annually documented, can serve as a key administrative and managerial tool in the processes of community development and maintenance. When HMDA data are combined with that of public sector investment (such as Community

Development Block Grant), the resulting picture can facilitate increased private sector investment and coordination between the two sectors.

Additional outcomes can be both immediate and long-term, and span the range of organizations and interests engaged with community development, housing maintenance and fair housing. Most significant is the potential for financial institutions to affect the performance of other members of the housing delivery system.

Implementation of a HMDA analysis project is ideally suited to the role of '701' planning organizations and the function of areawide comprehensive planning.

## TECHNICAL DETAIL

This chapter provides technical detail for implementing a HMDA analysis project and is organized in five sections. The first describes the tabular format used for compiling and presenting data, including step-by-step example readings of each table.

The second section concerns highlighting of findings and includes examples of possible highlights. In the third, illustrations and maps for visual conveyance of data and findings are given. The fourth and fifth sections discuss obtaining data, preparing data for processing, and data processing.

TABULAR FORMAT

Tables are used to present compilations of demographics, deed transfers, and financial institution loans. With the census tract as the basic building block, each table can be made to cover any geographic area--from a single census tract, to any combination of tracts, to a total county. The following examples are in terms of neighborhood, city and county, and are the result of summing data for the particular tracts comprising those areas.

Community Profile

Figure F represents a "community profile" for the census tracts for the St. Clair-Superior neighborhood of the city of Cleveland. This table can be constructed for each neighborhood of a central city and each sur-

# FIGURE F

## COMMUNITY PROFILE

### ST. CLAIR—SUPERIOR NEIGHBORHOOD

AREA CENSUS TRACTS: 1112, 1113, 1115-1119

HOUSING STOCK AND OCCUPANCY AS OF APRIL 1976<sup>1</sup>

1-family dwellings	1,497	Total 1-4-family dwellings	3,516
2-family dwellings	1,251	Units in large apartments	702
4-family dwellings	44	Units vacant in large apts.	48
2-4-family miscellaneous	724	Total occupied units	7,321

NEW DWELLING UNITS COMPLETED<sup>2</sup>

	1976	1977
1-family dwellings		
Units in multiples		

REAL ESTATE ACTIVITY - 1977

Deed Transfers <sup>3</sup>	Number	Average Sales Price	Average Tax Appraised Value
1-family	68	\$ 11,068	\$ 3,847
Condominium	0		
2-family	78	9,778	3,834
2- or 3-family conversion	8	11,988	3,850
4-6-family	23	11,465	4,573
Total 1-4-family <sup>4</sup>	172		
Large apartments	5	8,660	6,872
Total number transfers (residential)	177		

Deed Transfer Rate<sup>5</sup>

$$\frac{1\text{-family transfers}}{1\text{-family dwellings}} \times 100 = 4.5 \%$$

$$\frac{1\text{-4-family transfers}}{1\text{-4-family dwellings}} \times 100 = 4.9 \%$$

DEMOGRAPHICS

Estimated Racial Composition of Census Tracts in Area<sup>6</sup>

Census Tract	% Non-white			Census Tract	% Non-white		
	1970	1975	1977		1970	1975	1977
1112	27.5	38.3	28.8	1117	0.0	6.1	15.9
1113	0.0	0.0	16.7	1118	63.6	71.5	72.7
1115	0.0	7.6	3.8	1119	38.4	78.1	81.7
1116	2.9	10.5	14.4				

<sup>1</sup>"Family and Housing Characteristics for 1976." Northern Ohio Regional Information Center.

<sup>2</sup>Cleveland Electric Illuminating Company, Market Research.

<sup>3</sup>Records of Cuyahoga County Auditor's Office.

<sup>4</sup>Number of 4-family transfers estimated by assuming 80% of 4-6-family category was 4-family.

<sup>5</sup>Transfers do not include condominium units. Dwellings include new 1-family units completed in 1976.

<sup>6</sup>"A Report on Population and Race; Estimates of the Racial Composition of Census



- AREA CENSUS TRACTS--the tracts that comprise the community.
- HOUSING STOCK--the existing housing stock in terms of the number of 1-family dwellings, 2-family, etc.
- NEW DWELLING UNITS COMPLETED--new construction.
- REAL ESTATE ACTIVITY--a summary of the property deed transfers (sales) that occurred in the community during the previous year. These numbers are arrived at by totaling sales in each census tract. Categories given are those used by the Cuyahoga County auditor to classify property and probably will vary from county to county. The "1-4-family" category is important because it represents the in the L/T ratio. (The category must be 1-4-family to conform with loans as reported on HMDA statements.) In this example "average sales price" is given when in most cases the median sales price would be more significant.

Note that "deed transfer rate" does not necessarily indicate rate of households moving in or out of an area, for it does not take account of renters or internal moves.

- DEMOGRAPHICS--Shown is the estimated racial composition of each census tract in the area. This information is necessary to compare lending patterns with racial living patterns. U. S. Census of Population and Housing (1970-1980) provided these data, but in this example estimates for the year 1980 were used. These estimates were produced with a methodology devised by the Cuyahoga Plan of Ohio, Inc., a fair housing organization.

Other demographics such as income, household size, and age of dwelling could be included in this table.

### HMDA Data

Figure G represents the basic HMDA data processing format.

The example given is for a neighborhood (St. Clair-Superior). The computer program totals the loans reported for each census tract in the neighborhood and calculates several important percentages--including "median"

An example reading of this table follows these notes:

- A conventional 1-4-family mortgage loan is a loan secured by a first lien on residential property, including first lien refinancing of an existing loan.

FIGURE G

# HMDA FINANCIAL INSTITUTION INVESTMENT - 1977

## ST. CLAIR—SUPERIOR NEIGHBORHOOD

AREA - CLEVELAND ST. CLAIR

(ALL PRINCIPAL AMOUNTS ARE IN THOUSANDS OF DOLLARS)

INSTITUTION	MORTGAGE LOANS (1-4 FAMILY)				HOME IMPROVEMENT LOANS (1-4 FAMILY)				MORTGAGE LOANS (MULTI-FAM)		TOTAL INVESTMENT IN AREA					
	FHA OR VA NO. PRINC	CONVENTIONAL			NO.	% OF AREA	PRINC	% OF AREA	PRINC AREA	NO.	PRINC	TOTAL PRINC.	% CF TOTAL CLEV.			
		NO.	% OF AREA	PRINC.												
BANK B ORIGINATIONS	0	0	0.0	0	0	0.0	0	3	2.0	6	1.1	0	0	6	0.4	6.8
BANK C ORIGINATIONS	0	0	10	12.8	98	12.2	10	19	12.5	48	9.1	1	20	166	12.0	4.2
BANK D ORIGINATIONS	0	0	10	12.8	100	12.5	10	22	14.5	79	15.0	0	0			
BANK D PURCHASES	0	0	0	0.0	0	0.0	0	27	17.8	90	17.0	0	0			
BANK D TOTAL	0	0	10	12.8	100	12.5	10	49	32.2	169	32.0	0	0	265	15.5	2.3
BANK E ORIGINATIONS	0	0	0	0.0	0	0.0	0	1	0.7	5	0.9	0	0	5	0.4	1.5
BANK G ORIGINATIONS	0	0	0	0.0	0	0.0	0	6	3.9	16	3.0	0	0	16	1.2	0.4
BANK H ORIGINATIONS	0	0	0	0.0	0	0.0	0	4	2.6	46	8.7	0	0			
BANK H PURCHASES	0	0	0	0.0	0	0.0	0	51	33.6	152	28.8	0	0			
BANK H TOTAL	0	0	0	0.0	0	0.0	0	55	36.2	198	37.5	0	0	198	14.4	1.8
BANK I ORIGINATIONS	0	0	0	0.0	0	0.0	0	3	2.0	21	4.0	0	0	21	1.5	2.0
S & L A ORIGINATIONS	0	0	1	1.3	9	1.1	9	0	0.0	0	0.0	0	0	9	0.7	0.1
S & L B ORIGINATIONS	0	0	4	5.1	33	4.1	8	2	1.3	11	2.1	0	0	44	3.2	0.4
S & L C ORIGINATIONS	0	0	0	0.0	0	0.0	0	2	1.3	13	2.5	0	0	13	0.9	0.6
S & L G ORIGINATIONS	0	0	2	2.6	58	7.2	29	0	0.0	0	0.0	0	0	58	4.2	1.4
S & L K ORIGINATIONS	1	6	1	1.3	7	0.9	7	0	0.0	0	0.0	0	0	13	0.9	0.2
S & L O ORIGINATIONS	0	0	3	3.8	48	6.5	23	0	0.0	0	0.0	0	0	30	5.1	2.4

FIGURE G, CONT.

(ALL PRINCIPAL AMOUNTS ARE IN THOUSANDS OF DOLLARS)

INSTITUTION	MORTGAGE LOANS (1-4 FAMILY)					HOME IMPROVEMENT LOANS (1-4 FAMILY)					MORTGAGE LOANS (MULTI-FAM)					TOTAL INVESTMENT IN AREA				
	FHA OR VA		CONVENTIONAL			NO.		% OF			NO.		% OF			NO.		% OF		
	NO.	PRINC	NO.	% OF AREA	PRINC	NO.	% OF AREA	PRINC	Avg. PRINC.	NO.	% OF AREA	PRINC	NO.	% OF AREA	PRINC	NO.	% OF AREA	PRINC	% OF INVESTMENT IN AREA	% IF INVESTMENT IN CLEV. CO
S&L Q ORIGINATIONS	0	0	35	44.9	285	35.6	8			3	2.0	25	4.7	0	0	310	22.4	10.8	2.0	
S&L S ORIGINATIONS	0	0	1	1.3	7	0.9	7			0	0.0	0	0.0	0	0	7	0.5	0.2	0.0	
S&L T PURCHASES	2	25	0	0.0	0	0.0	0			0	0.0	0	0.0	0	0	25	1.8	0.9	0.0	
S&L V ORIGINATIONS	0	0	5	6.4	29	3.6	6			9	5.9	16	3.0	0	0	45	3.3	4.6	1.0	
S&L W ORIGINATIONS	0	0	2	2.6	21	2.6	11			0	0.0	0	0.0	0	0	21	1.5	0.1	0.0	
S&L Z ORIGINATIONS	0	0	1	1.3	33	4.1	33			0	0.0	0	0.0	0	0	33	2.4	1.1	0.0	
S&L BB ORIGINATIONS	0	0	2	2.6	43	5.4	22			0	0.0	0	0.0	0	0	43	3.1	0.6	0.0	
BANK TOTALS	0	0	20	25.7	198	24.8	10			136	89.5	463	87.7	1	20	661	45.4	2.0	0.0	
S&L TOTALS	3	31	58	74.4	602	75.3	10			16	10.6	65	12.4	1	2	700	50.7	0.8	0.0	
ALL INSTITUTIONS	3	31	78	100.0	800	100.0	10			152	100.0	528	100.0	2	22	1381	100.0	0.9	0.0	

- A "home improvement loan" is a loan unsecured or secured by collateral other than a first lien on residential real property, the proceeds of which are to be used for repairing, rehabilitating or remodeling an existing residential dwelling.
- Reported loans do not necessarily include loans originated and sold or paid in full during the year in question.
- Lenders report their loans as "originations" (i.e., loans made originally by the depository institution), "purchases" (i.e., loans originated by another party but purchased by the depository institution), or "participation" (i.e., where the loan is made jointly or cooperatively). Most loans reported were originated, but where purchases or participations were involved, they are identified as such in this table, followed by the institution total for all types.

example reading:

- Listed down the left side of the table is each institution which reported an investment in the St. Clair-Superior neighborhood in 1977. Twenty-one are listed, which means that 17 FMDA-reporting institutions made no loans in this particular neighborhood. Banks (7 of them) are listed first in alphabetical order, followed by S & L's. At the bottom of the table are found totals for all banks, all S & L's and all institutions combined.
- The first major column heading is MORTGAGE LOANS (1-4- FAMILY), which is subdivided into FHA OR VA and CONVENTIONAL. Under FHA OR VA (that is, government-secured loans made by these lenders) one sees that S & L K originated one (1) for \$6,000 and S & L T purchased two (2) involving a total principal of \$25,000, for a total of three (3) such loans and a combined principal of \$31,000.
- Moving across the column: under CONVENTIONAL one sees that Bank C originated ten (10) loans. These 10 loans represented 12.8% of the total (78) conventional loans made in the neighborhood. The 10 loans involved a total principal of \$100,000, which represented 12.5% of the total principal invested by all FMDA-reporting lenders in conventional 1-4-family mortgages (\$800,000). The 10 loans had an average principal of \$10,000.
- Moving across to the major heading HOME IMPROVEMENT LOANS (1-4- FAMILY) and continuing on the Bank C line, C originated 19 such loans, which represented 12.5% of the grand total (152), involving a total principal of \$48,000, or 9.1% of the neighborhood total of \$528,000.

for \$20,000.

- The last major column is TOTAL INVESTMENT IN AREA. Cont. with Bank C: Under TOTAL PRINCIPAL is the figure of \$166,000. This is the total investment (all mortgage and home improvement dollars combined) made by C in the St. Clair-Superior neighborhood in 1977.

In the next sub-column, the \$166,000 investment represented 12.0% of the grand total investment (\$1.381 million) made by all 17 institutions.

Moving to the next sub-column, the \$166,000 investment represented 4.2% of the amount invested in the city of Cleveland by Bank C (\$3.972 million, see Figure H) and 0.7% of the amount invested in Cuyahoga County by C (\$25.14 million, Figure I).

- The last column, TOTAL INVESTMENT IN AREA, shows:
  - The largest dollar investor in the neighborhood was S & L Q with \$310,000 (22.4% of neighborhood total).
  - The largest percentage investor in terms of its distribution of investment across the city of Cleveland was again S & L Q with 10.8% of its Cleveland total in this particular neighborhood.
  - The largest percentage investor in terms of its distribution of investment across the county (covering 59 suburbs plus Cleveland) was S & L O. 2.5% of O's total county investment went into the St. Clair-Superior neighborhood.
- The various percentages in this table document institutional involvement from several perspectives:
  - The number of loans as a % OF AREA states each institution's market share in relation to all other HMDA-reporting institutions. Bank C's 10 conventional mortgage loans amounted to 12.8% of the market, which (along with Bank D) was second to S & L Q's 44.9%. Bank C's involvement in this neighborhood can be compared with its involvement in all other neighborhoods and suburbs. Degrees of involvement can be ranked and mapped (Figure A is an example).
  - The total number of conventional loans by all banks as a group (20) and all S & L's as a group (58) offers another perspective. With their 20 loans, the banks

had 25.7% of the institutional conventional mortgage market. Again, this percentage for each neighborhood and suburb can be ranked and mapped so as to display the pattern of involvement by banks as a group and S & L's as a group. (The involvement of banks as a group in neighborhoods and suburbs across Cuyahoga County in 1977 ranged from 5% to 49%.)

- The neighborhood total of 78 institutional conventional mortgage loans offers another perspective when compared with the deed transfers (sales) that occurred during the same year. Figure F shows a total of 172 sales of 1-4-family properties. The neighborhood L/T ratio was, therefore, 0.45--fourth lowest of 14 Cleveland neighborhoods (see Figure I, L/T RATIO column). The difference in the figures, 94, represents theoretical market potential. If half the 94 home buyers had been able to qualify for conventional financing, and if they could have been "found" by the institutions, the lenders would have increased their business in that neighborhood by 60%, and increased the L/T ratio to 0.73.
- Percentages in the column under TOTAL INVESTMENT IN AREA enable the involvement of a single institution (or banks and S & L's as groups) to be viewed in relation to all other institutions at the neighborhood, city and county levels.
- Although an actual percentage is not given in the table, the split of investment between mortgages and home improvement loans is apparent. Of the banks' \$681,000 total investment in the St. Clair-Superior neighborhood, \$463,000 (or 68%) was in home improvement loans, while for all S & L's the figure was \$65,000 out of a total of \$700,000 (or 9%).

Figure H is the same table but for the entire city of Cleveland. At level, for example, one sees that:

- Bank C's share of the conventional market was 1.7%--considerably less than its 12.8% share in the St. Clair-Superior neighborhood.
- Bank C invested a total of \$3.972 million in residential properties in the city of Cleveland during 1977, and that represented 2.4% of all dollars invested in Cleveland by all FMDA-reporting institutions and 15.8% of Bank C's total investment in the county (including the city of Cleveland).

FIGURE H  
HMDA FINANCIAL INSTITUTION INVESTMENT - 1977  
CITY OF CLEVELAND

AREA - CITY OF CLEVELAND

INSTITUTION	ALL PRINCIPAL AMOUNTS ARE IN THOUSANDS OF DOLLARS										TOTAL INVESTMENT IN AREA				
	MORTGAGE LOANS (1-4 FAMILY)			HOME IMPROVEMENT LOANS (1-4 FAMILY)			MORTGAGE LOANS (MULTI-FAM)			TOTAL PRINC- TOTAL CUM					
	CONVENTIONAL		% OF AREA	% OF AREA		% OF AREA	% OF AREA								
	FHA OR VA	NO. PRINC		NO.	% OF AREA		NO.	% OF AREA	NO.			% OF AREA			
BANK A ORIGINATIONS	0	0	0.0	0	0.0	5	0.1	40	0.2	0	0	40	0.0		
BANK B ORIGINATIONS	0	0	0.0	0	0.0	16	0.2	89	0.4	0	0	89	0.1		
BANK C ORIGINATIONS	0	0	85	1.7	1809	1.6	20	877	12.7	2143	8.6	1	20	3972	2.4
BANK D ORIGINATIONS	0	0	260	5.1	4679	4.1	18	1080	15.6	3982	15.9	0	0		
PURCHASES	0	0	0	0.0	0	0.0	18	1080	15.6	3982	15.9	0	0		
TOTAL	0	0	260	5.1	4679	4.1	18	2133	30.9	7369	29.3	0	0	12028	7.4
BANK E ORIGINATIONS	0	0	11	0.2	250	0.2	23	35	0.5	100	0.4	0	0	350	0.2
BANK F ORIGINATIONS	0	0	4	0.1	96	0.1	24	6	0.1	43	0.2	3	69	208	0.1
BANK G ORIGINATIONS	2	41	60	1.2	1295	1.1	22	881	12.7	3739	14.9	0	0	5075	3.1
BANK H ORIGINATIONS	0	0	122	2.4	3233	2.8	27	217	3.1	872	3.5	0	0		
PURCHASES	0	0	0	0.0	0	0.0	27	2042	29.5	7365	29.3	0	0		
TOTAL	0	0	122	2.4	3233	2.8	27	2259	32.7	8217	32.8	0	0	11450	7.1
BANK I ORIGINATIONS	0	0	16	0.3	321	0.3	20	143	2.1	772	3.1	0	0	1093	0.7
S & L A ORIGINATIONS	49	1533	453	8.8	10831	9.5	24	0	0.0	0	0.0	5	947	12511	7.7

## ALL PRINCIPAL AMOUNTS ARE IN THOUSANDS OF DOLLARS

INSTITUTION	MORTGAGE LOANS (1-4 FAMILY)						HOME IMPROVEMENT LOANS (1-4 FAMILY)				MORTGAGE LOANS (MULTI-FAM)		TOTAL INVESTMENT IN AREA		% INSTN'S INVESTMENT IN CUYA. CO.	
	FHA OR VA		CONVENTIONAL				NO.		% OF PRINC AREA		NO.		% OF PRINC AREA			
	NO.	PRINC	NO.	% OF AREA	PRINC	% OF AREA	NO.	% OF AREA	NO.	% OF PRINC	NO.	% OF PRINC	TOTAL PRINC. TOTAL	% OF INVESTMENT IN CUYA. CO.		
& L D ORIGINATIONS	12	315	567	11.0	12336	10.8	22	79	1.1	365	1.5	10	709	13725	8.4	15.3
& L E ORIGINATIONS	0	0	109	2.1	2302	2.0	21	30	0.4	159	0.6	4	704	3165	1.9	18.6
& L F ORIGINATIONS	0	0	22	0.4	507	0.4	23	2	0.0	4	0.0	17	1344	1855	1.1	17.8
& L G ORIGINATIONS	14	412	167	3.3	3361	2.9	20	22	0.3	81	0.3	8	566	4420	2.7	19.6
& L H ORIGINATIONS	0	0	127	2.5	3786	3.3	30	5	0.1	33	0.1	7	658	4477	2.7	12.3
& L I ORIGINATIONS	0	0	65	1.3	1336	1.2	21	11	0.2	31	0.1	18	1290	2657	1.6	17.3
& L J ORIGINATIONS	0	0	2	0.0	60	0.1	30	0	0.0	0	0.0	1	25	85	0.1	1.6
& L K ORIGINATIONS	214	6004	251	4.9	6423	5.6	26	0	0.0	0	0.0	1	29	12456	7.6	20.6
& L L ORIGINATIONS	0	0	7	0.1	167	0.1	24	0	0.0	0	0.0	3	52	219	0.1	9.2
& L M ORIGINATIONS	1	23	58	1.9	2170	1.9	22	44	0.6	171	0.7	2	62	2426	1.5	13.8
& L N ORIGINATIONS	0	0	176	3.4	3670	3.2	21	8	0.1	23	0.1	14	571	4264	2.6	25.4
& L O ORIGINATIONS	0	0	74	1.4	1073	0.9	15	0	0.0	0	0.0	22	528	1601	1.0	55.1
& L P ORIGINATIONS	0	0	14	0.3	277	0.2	20	3	0.0	42	0.2	0	0	319	0.2	54.9
& L Q ORIGINATIONS	0	0	151	2.9	2720	2.4	18	10	0.1	62	0.2	2	105	2887	1.8	17.9
& L R ORIGINATIONS	0	0	18	0.4	483	0.4	27	3	0.0	12	0.0	1	32	527	0.3	8.8



FIGURE H, CONT.

INSTITUTION	ALL PRINCIPAL AMOUNTS ARE IN THOUSANDS OF DOLLARS														TOTAL INVESTMENT IN AREA	% OF INVESTMENT IN AREA
	MORTGAGE LOANS (1-4 FAMILY)				HOME IMPROVEMENT LOANS (1-4 FAMILY)				MORTGAGE LOANS (MULTI-FAM)				TOTAL PRINC.			
	FHA OR VA		CONVENTIONAL		HOME IMPROVEMENT LOANS (1-4 FAMILY)		MORTGAGE LOANS (MULTI-FAM)									
	NO.	PRINC.	NC.	% OF AREA	PRINC.	% OF AREA	NO.	% OF PRINC. AREA	NO.	PRINC.						
S & L S ORIGINATIONS	3	94	178	3.5	4256	3.7	24	0	0.0	0	0.0	1	200	4550	2.8	
S & L T ORIGINATIONS	0	0	86	1.7	1576	1.4	18	7	0.1	28	0.1	5	330			
PURCHASES	44	882	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0			
TOTAL	44	882	86	1.7	1576	1.4	18	7	0.1	28	0.1	5	330	2816	1.9	
S & L U ORIGINATIONS	0	0	4	0.1	141	0.1	35	2	0.0	5	0.0	0	0	146	0.1	
S & L V ORIGINATIONS	4	100	42	0.8	765	0.7	18	10	0.1	18	0.1	0	0			
PURCHASES	0	0	5	0.1	110	0.1	22	10	0.0	0	0.0	0	0			
TOTAL	4	100	47	0.9	875	0.8	19	10	0.1	18	0.1	0	0	993	0.7	
S & L W ORIGINATIONS	0	0	824	16.0	19667	17.2	24	0	0.0	0	0.0	24	1794	21461	13.2	
S & L X ORIGINATIONS	0	0	56	1.1	1326	1.2	24	0	0.0	0	0.0	0	0	1326	0.8	
S & L Y ORIGINATIONS	0	0	96	1.9	2257	2.0	24	0	0.0	0	0.0	7	150	2407	1.5	
S & L Z ORIGINATIONS	5	109	180	3.5	2915	2.5	16	11	0.2	28	0.1	4	95	3147	1.9	
S & L AA ORIGINATIONS	0	0	2	0.1	73	0.1	24	0	0.0	0	0.0	0	0	73	0.0	
S & L BB ORIGINATIONS	0	0	175	3.4	4304	3.8	25	0	0.0	0	0.0	12	2756			
PARTICIPATIONS	0	0	46	0.9	497	0.4	11	0	0.0	0	0.0	0	0			
TOTAL	0	0	221	4.3	4801	4.2	22	0	0.0	0	0.0	12	2756	7557	4.7	
BANK TOTALS	2	41	562	11.0	11683	10.3	21	6357	92.0	22492	89.8	4	89	34305	21.1	
S & L TOTALS	346	9472	4575	89.1	102656	89.8	22	558	8.1	2566	10.3	189	13833	128527	79.0	
ALL INSTITUTIONS	348	9513	5137	100.0	114339	100.0	22	6915	100.0	25058	100.0	193	13922	162832	100.0	

## Summary Tables

Figure I is a summary table of key information for each neighborhood and suburb. All but one bit of this information (FHA data) is taken from previously discussed tables. Listed first are 14 city of Cleveland neighborhoods; suburbs follow. Again, using St. Clair-Superior as an example:

- The DEED TRANSFER ("turnover") RATE of 1-FAMILY DWELLINGS for 1977 was 4.5% (from Figure F).
- The L/T RATIO was 0.45--calculated by dividing total conventional loans reported on 1-4-family properties (Figure G, TOTAL ALL INSTITUTIONS: 78) by TOTAL 1-4-FAMILY DEED TRANSFERS (Figure F: 172).
- MORTGAGE LOANS, % BY S & L's and % BY BANKS represents "market split" for the neighborhood. From Figure G, TOTALS, the 58 S & L conventional mortgage loans were 74% of the 78 total; banks' share was 26%.
- TOTAL dollar INVESTMENT (mortgage and home improvement) for S & L's was \$700,000 (Figure G, TOTALS); for banks \$681,000.
- 1-FAMILY DWELLINGS INSURED BY FHA IN 1977 numbered four, which represented 5.9% of total 1-family deed transfers. (The FHA figures in this table were obtained from HUD, and do not necessarily overlap the three FHA or VA loans given in Figure G. The three could have been VA-guaranteed.)
- The AVERAGE SALES PRICE of 1-FAMILY properties was \$11,069 (Figure F).

Figure J is a table of county-level totals of residential investment (and deposits). Cuyahoga County (Cleveland) is the central county; the other four counties are contiguous. This table provides an areawide perspective on the distribution of investment by institutions whose home offices are in Cuyahoga County. For example:

- Bank C invested \$25.14 million in Cuyahoga County (including \$3.972 million in the city of Cleveland). That amount represented 73% (the figure in parentheses) of the bank's grand

**FIGURE I**  
**COMMUNITY SUMMARY - 1977**  
**REAL ESTATE ACTIVITY/INVESTMENT BY INSTITUTIONAL LENDERS**

AREA	DEED TRANSFER RATE 1-FAMILY DWELLINGS (PERCENT)	L/T RATIO MORTGAGE LOANS* DEED TRANSFERS	INSTITUTIONAL LENDERS					1-FAMILY DWELLINGS INSURED BY FIA IN 1977		AVERAGE SALES PRICE
			MORTGAGE LOANS*		TOTAL INVESTMENT**	BANKS	NUMBER	% OF 1-FAMILY DEED TRANSFERS		
			% BY S & L's	% BY BANKS						
CITY OF CLEVELAND	5.4	0.69	89	11	\$ 128,527	\$ 34,305	331	6.7	\$ 26,364	
Near East	4.4	0.60	82	18	1,594	998			14,145	
St. Clair-Superior	4.5	0.45	74	26	700	681	4	5.9	11,069	
East	1.5	0.33	69	31	949	2,081	8	12.9	10,477	
Glenville	2.8	0.26	70	30	1,481	3,161	32	19.9	12,661	
West Collinwood	4.9	0.43	81	19	2,276	909	16	17.8	18,914	
East Collinwood	7.0	0.72	85	15	10,904	2,298	27	6.6	27,825	
Broadway	3.9	0.75	92	8	5,401	1,319	9	4.4	18,318	
Buckeye-Shaker	5.5	0.63	90	10	7,775	1,395	23	20.0	23,023	
Southeast	3.5	0.51	88	12	9,260	7,592	112	18.8	20,658	
Near West	5.6	0.67	93	7	9,791	2,143	20	4.8	16,149	
Ohio City	5.7	0.72	89	11	2,829	493			13,759	
South	6.6	0.95	92	8	18,668	2,415	6	0.9	33,283	
Midwest	6.9	0.79	91	9	18,770	2,783	20	4.1	27,717	
West	7.6	0.80	90	10	37,396	5,998	54	3.6	33,833	
WY VILLAGE	10.2	1.11	83	17	21,859	5,349			58,867	
BEACHWOOD	6.1	1.19	67	33	9,489	4,306			81,828	
EDFORD	5.5	0.98	89	11	7,785	1,417	1	0.4	37,530	
EDFORD HEIGHTS	9.6	0.83	89	11	9,726	1,052	4	1.7	43,117	
WENTLEVILLE	5.8	1.83	91	9	664	75			70,517	

\*Mortgage loans on 1-4-family dwellings (conventional only).

# PART BY COUNTY DOLLAR AMOUNTS IN THOUSANDS)

	CUYAHOGA		GEAUGA		LAKE		MEDINA		LORAIN		OTHER <sup>3</sup>		TOTAL PRINCIPAL	I <sup>4</sup> D
	PRINCIPAL (%) <sup>1</sup>	SAVINGS DEPOSITS (\$) <sup>2</sup>	PRINCIPAL (%)	SAVINGS DEPOSITS (\$)	PRINCIPAL (%)	SAVINGS DEPOSITS (\$)	PRINCIPAL (%)	SAVINGS DEPOSITS (\$)	PRINCIPAL (%)	SAVINGS DEPOSITS (\$)	PRINCIPAL (%)	SAVINGS DEPOSITS (\$)		
A.	\$ 445 (88)	\$ 12,744 (100)	\$	\$	\$ 40 (8)	\$	\$ 19 (4)	\$	\$	\$	\$ 2 (0)	\$	\$ 506	.19
B.	318 (90)	75,144 (100)					19 (5)				17 (5)		354	.04
C.	25,140 (73)	694,043 (100)	1,941 (6)		1,966 (6)		584 (1)				4,829 (14)		34,460	.17
D.	71,644 (77)	1,704,248 (100)	5,495 (6)		5,060 (5)		2,593 (3)		2,049 (2)		6,290 (7)		93,131	.19
E.	4,664 (73)	124,700 (90)	321 (5)		626 (10)	14,453 (10)	107 (2)				661 (10)		6,379	.13
F.	820 (90)	14,482 (100)							95 (10)				915	.06
J.	141 (78)	26,718 (100)	40 (22)										181	.03
G.	45,949 (78)	785,983 (100)	4,132 (7)		1,841 (3)		1,748 (3)		1,846 (3)		3,444 (6)		58,960	.21
H.	38,174 (67)	710,949 (100)	2,347 (4)		1,883 (3)		968 (2)				13,524 (24)		56,896	.18
I.	7,759 (71)	357,694 (100)	378 (4)		253 (2)		89 (1)				2,451 (22)		10,930	.20
L. BANKS	\$195,054 (74)	\$ 4,504,705 (100)	\$14,654 (6)	\$	\$ 11,669 (4)	\$ 14,453 (0)	\$ 6,127 (2)	\$	\$ 3,990 (2)		\$ 31,218 (12)		262,712	
L. S&L's AND UNKS	\$999,755 (53)	10,282,808 (94)	\$59,328 (3)	\$79,789 (1)	\$118,634 (6)	\$176,857 (2)	\$ 81,970 (5)	\$62,302 (1)	\$93,307 (5)	\$119,513 (1)	\$522,804 (28)	\$183,087 (1)	\$1,875,798	

all invested in county in 1977; all mortgage and home improvement loans, originated, purchased and participations. (Percent of institution total.)

ular savings and time deposits in county from individuals, partnerships and corporations. Savings & Loan Associations as of September 30, 1977; banks of June 30, 1977. (Percent of institution total.)

y include some loans made in Cuyahoga, Geauga, Lake, Medina or Lorain Counties.

ratio of book value of all outstanding loans secured by residential properties (conventional and government insured) to total savings and time deposits. Savings d loans as of December 31, 1977; for banks, average of 1977 quarterly reports is used.

held deposits of \$694.645 million, which represented 100% of the institution's total (i.e., Bank C had no offices in other counties).

- Moving across the Bank C line, it invested \$1.941 million in Geauga County (representing 6% of total), \$1.966 million in Lake County (6% of total), and so on.
- Investment listed in the OTHER column could have been in other nearby counties, or elsewhere. Financial institutions list their investment on HMDA statements in terms of "inside" a particular SMSA and "outside" that SMSA. Most "outside" investment seems to involve "purchases" in the "secondary housing market" (FNMA and GNMA).
- Bottom line totals of this table show that 74% of all bank investment was in Cuyahoga County (where 100% of bank deposits were held). But banks and S & L's combined invested 53% of all dollars in Cuyahoga County (where 94% of all deposits were held). The same table for S & L's would show that S & L investment was six-times that of all banks, and that 50% of S & L investment was in Cuyahoga County, where 90% of all S & L deposits were held.
- The column at the far right of Figure J is headed by I/D, which represents the ratio of investments to deposits. It is the ratio of the book value of all outstanding loans secured by residential properties (conventional and government-secured) to total deposits held. (See p. 82 for discussion of data sources for I/D ratio.)

The I/D ratio expresses the extent to which an institution has invested its deposits in residential properties. Figure J shows the larger commercial banks with figures ranging from 0.17 to 0.21. Bank C's figure of 0.17 means that for every \$100 of deposits held, the bank had \$17 in outstanding loans on residential properties. During the same year, most S & L's had I/D ratios of at least 0.80, which illustrates the basic difference between thrift institutions and commercial banks. Thrifts serve primarily the credit needs of home purchasers; banks serve primarily the credit needs of businesses and industries.

The Use of Deposit Information. The above reference to deposit figures requires some elaboration. Community organizations have been inclined to use the amount of deposits held by a financial institution in a neighborhood as a direct indicator of what should be the institution's

vestment in the neighborhood. Deposit data do not lend themselves to that analysis. Deposits held at a particular office do not necessarily belong to people living in the vicinity of that office. People often open accounts, move, and continue their account at the original office. Or some will open an account at an office because of convenience of location, not because they live nearby.

Deposit data, therefore, cannot be related to small geographic sub-areas as can the rest of the data employed in this analysis. For large areas, however, such as county, a significant degree of relationship might be valid. For example:

Figure J shows that in 1977, 53% of all residential investment by the Cuyahoga County institutions was inside the county, where 94% of all deposits were held. If it is reasonable to assume that a very large percentage of all depositors (certainly greater than 53%) lived within the county, and if it can be shown that residential investment opportunities existed within the county, then possibly the distribution of investment capital could be questioned.

### HIGHLIGHTING FINDINGS

Significance of findings might vary from city to city, but possibilities for highlighting are:

- L/T ratio -- Which census tracts, neighborhoods, communities had the lowest ratios? If a multi-year analysis was performed, where did ratios increase? decrease? How did the pattern of L/T ratios compare with public-sector investment target areas (such as CDBG Neighborhood Strategy Areas)? With demographic characteristics of neighborhoods and communities?
- Market potential -- If there were L/T ratios less than 1.0, what was the size of the market potential and what impact

would realizing that potential have on investment elsewhere. This can be a particularly important product of the analysis. Figure E is an example statement of market potential.

- Institutional involvement -- In which neighborhoods or communities were S & L's as a group most involved, least involved? Same for banks as a group.
- Turnover rate -- Which census tracts or neighborhoods had the highest turnover rate? The lowest?
- Overall distribution of investment -- What percentage of investment went to the central city? suburbs? elsewhere (Figure M.)
- Institutional comparisons -- What was the relative involvement of financial institutions in an area, such as a central city? Inevitably, the question is raised, and in the event state wishes to provide an answer, two methods are suggested:

Figure K represents a ranking of institutions on the basis of three factors. For example: Institution D invested \$12.456 million in the central city in 1977 and those dollars were 20.6% of the total D invested in the County. In terms of that factor, D was at the top of the list of the largest institutions. The ratio of D's central city investment to its deposits held in the county (times 1000) was 31.6--second highest of the largest institutions. And 10% of D's conventional mortgage loans were in census tracts with L/T ratios of 0.5 or less. This third factor measures the degree to which the institution was involved in areas where all institutions taken collectively were least involved--that is, areas where the market presence was most difficult. Thus, of the largest institutions D was in the top three on each of the three factors.

Figure L. In this method, the first step is to rank the institutions in terms of deposits held within the county. Each institution is then considered in relation to the largest. For example: Institution II, in 1977 was 0.46 the size of institution I and had 0.65 the number of offices. Institution II's offices within city of Cleveland neighborhoods were 0.43 of institution I's dollar investment in residential mortgages was 0.28 of I's, in home improvement loans it was 0.51 of I's, and the combined investment was 0.42 of I's. In the suburbs of the county, II had .73 of I's offices and invested in mortgages .67 of what I did--and so on.

With this method, it is apparent that institutions

FIGURE K

# FINANCIAL INSTITUTIONS RANKED IN TERMS OF RESIDENTIAL INVESTMENT IN CENTRAL CITY - 1977

TOTAL RESIDENTIAL INVESTMENT <sup>1</sup>				CONVENTIONAL MORTGAGES	
Institution	Amount (\$ in 000's)	% of County <sup>2</sup>	Ratio to County Deposits (x 1000) <sup>3</sup>	Total No.	% in Lower L/T Areas <sup>4</sup>
A	( \$ 993)	34.1	C 72.5	U ( 18)	38.9
B	( 1,326)	27.0	L 53.0	X ( 3)	33.3
C	( 4,264)	25.4	B 39.3	N ( 86)	24.4
D	( 12,456)	22.6	[REDACTED] 38.8	A ( 47)	23.4
E	( 4,420)	19.6	[REDACTED] 31.7	H (109)	17.4
F	( 21,461)	18.8	K 29.5	[REDACTED] (544)	13.2
G	( 14,063)	18.1	[REDACTED] 29.1	K ( 22)	13.6
H	( 3,165)	18.6	B 27.9	[REDACTED] (178)	10.0
I	( 7,557)	17.9	A 27.9	[REDACTED] (251)	9.0
J	( 2,887)	17.9	M 25.1	[REDACTED] (180)	8.9
K	( 1,855)	17.8	R 24.0	[REDACTED] (567)	8.2
L	( 2,657)	17.3	H 23.2	[REDACTED] ( 96)	8.2
M	( 13,725)	16.8	[REDACTED] 22.8	[REDACTED] (221)	8.2
N	( 2,816)	14.8	[REDACTED] 16.8	P ( 98)	8.2
O	( 3,147)	14.8	N 16.3	L ( 65)	7.7
P	( 2,426)	13.8	T 15.8	E (167)	6.6
Q	( 12,511)	13.8	U 15.0	[REDACTED] (453)	6.6
R	( 4,477)	12.3	J 14.8	C (176)	5.7
S	( 4,550)	12.3	[REDACTED] 14.4	[REDACTED] (824)	5.7
T	( 219)	9.2	P 14.0	J (151)	5.3
U	( 527)	8.8	V 12.0	R (167)	4.0
V	( 2,394)	8.3	[REDACTED] 11.8	V ( 35)	2.9
W	( 2,407)	8.3	[REDACTED] 11.8	B ( 54)	1.9
X	( 73)	4.8	Y 6.7	T ( 7)	0.0
Y	( 146)	4.0	[REDACTED] 6.7	Y ( 4)	0.0
Z	( 85)	1.6	Z 2.6	Z ( 2)	0.0
			X 0.8		

<sup>1</sup>Total principal amount of all loans (mortgage and improvement) made in central city during 1977.

<sup>2</sup>Total principal amount lent by the institution in the central city as a percentage of total lent by the institution in the county.

<sup>3</sup>Ratio of total principal lent in the central city by the institution to total deposits (savings and time) held within the County by the institution (times 1000).

<sup>4</sup>Number of conventional loans made by the institution in central city areas where the L/T Ratio was less than .5 as a percent of total conventional loans made. (L/T is ratio of total conventional loans made in an area by all institutions to total number of deed transfers.)

[REDACTED] Deposits held in County greater than \$200 million.

[REDACTED] Deposits held in County less than \$200 million, greater than \$100 million.



**FIGURE 1**  
**FINANCIAL INSTITUTION SIZE AND RESIDENTIAL INVESTMENT**  
**RELATIVE STANDINGS - 1977**

Institution	FIVE INSTITUTIONS IN RELATION TO INSTITUTION I									
	CUYAHOGA CO. TOTAL		CITY OF CLEVELAND			CUYAHOGA CO. SUBURBS			OUTSIDE CUY. CO.	
	Offices	Deposits**	Off.	Res. Investment***		Off.	Res. Investment		Mort.	Total
				Deposits	Off.		Res.	Home Imp.		
I	27	\$1,704,248	-	-	-	-	-	-	-	-
II	50	785,983	.65	.46	.43	.73	.67	.76	.69	.60
III	28	710,949	.36	.42	.21	.95	.42	.45	.45	.87
IV	51	694,043	.66	.41	.57	.33	.62	.37	.36	.43
V	29	357,494	.38	.21	.11	.09	.49	.20	.11	.15
VI	17	124,700	.22	.07	.04	.03	.24	.02	.07	.08

\*Excluding downtown.

\*\*Regular and time savings. (Dollars in Thousands.)

\*\*\*Investment ratios are loan principal dollars.

more in the city of Cleveland. With 42% the size and one-fifth the offices, III invested 95 dollars for every 100 by institution I.

## ILLUSTRATIONS AND MAPS

Visual conveyance of data and findings through illustrations and maps is particularly important. Tables alone usually will not make apparent patterns and relationships between patterns. Pictures can aid greatly. For example, Figures B and C convey the relationship between L/T ratio and FHA-insured lending.

The following illustrations and maps are examples. Careful consideration should be given to the selection of illustrations, choosing those which portray particularly significant findings.

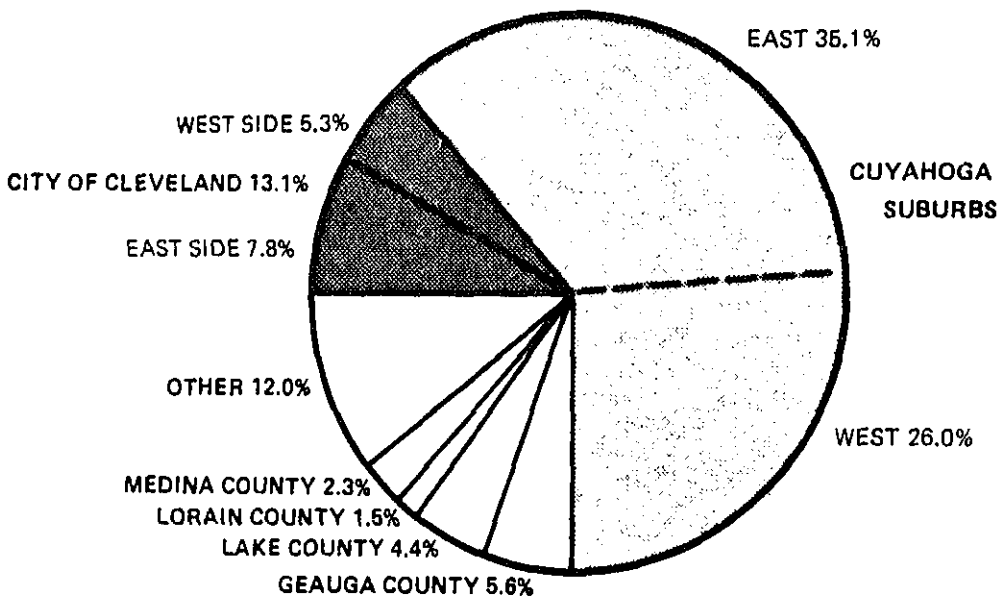
### "Pie" Charts

Figure M represents a highly effective illustration--a "pie" chart which in this case shows the geographic distribution of investment percentages. (The percentages are from data in Figures H and J.)

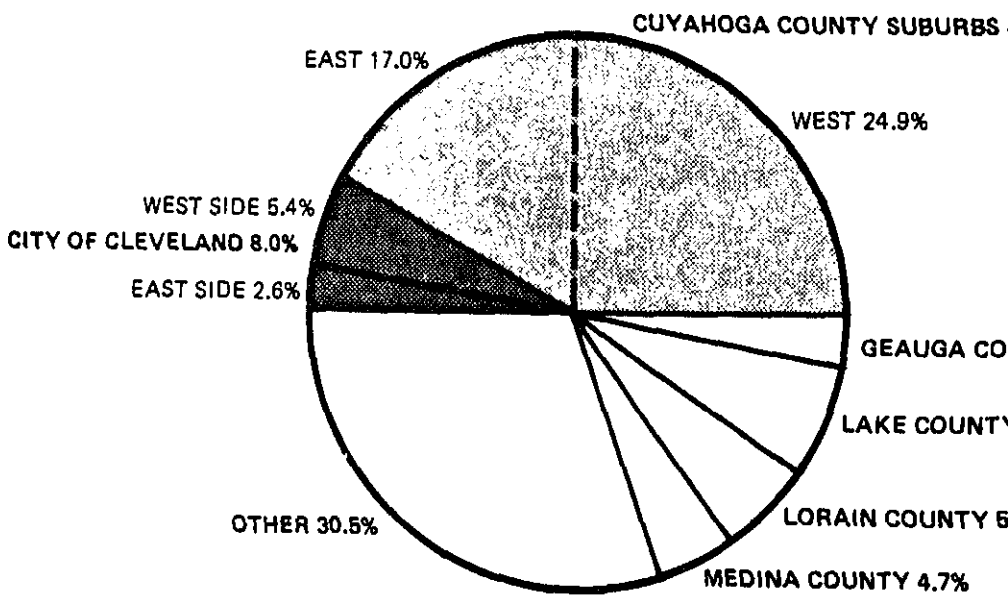
### Maps

- Figure A represents the market share distribution of one financial institution, by neighborhood. For more detail, the institution's market share in each census tract could be calculated and mapped.
- Figures B and C are examples of computer-made maps (B shows L/T ratios by neighborhood and suburb, and C shows FHA-insured loans for the same geographic areas). The computer program employed is the Synagraphic Mapping System (SYMAP).

SYMAP is a widely used mapping program which outputs to a standard line printer (as opposed to a pen plotting device). The program is capable of creating complete maps, including legend, title, boundaries and other information, which



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display spatial data geographically with variable darkness and texture, depending on user-selected symbols and data interval ranges.

- Figure D is a map of census tract L/T ratios for the city of Cleveland.
- Figure N shows a map of census tracts and neighborhoods used in the analysis for the city of Cleveland.
- Figure O is a map of all bank and S & L offices by neighborhood and suburb within Cuyahoga County.
- Figure P represents a census tract map of estimates of non-white population, the pattern of which can be used for visual correlations with other maps, such as Figures B, C and D.

## OBTAINING AND PREPARING DATA FOR PROCESSING

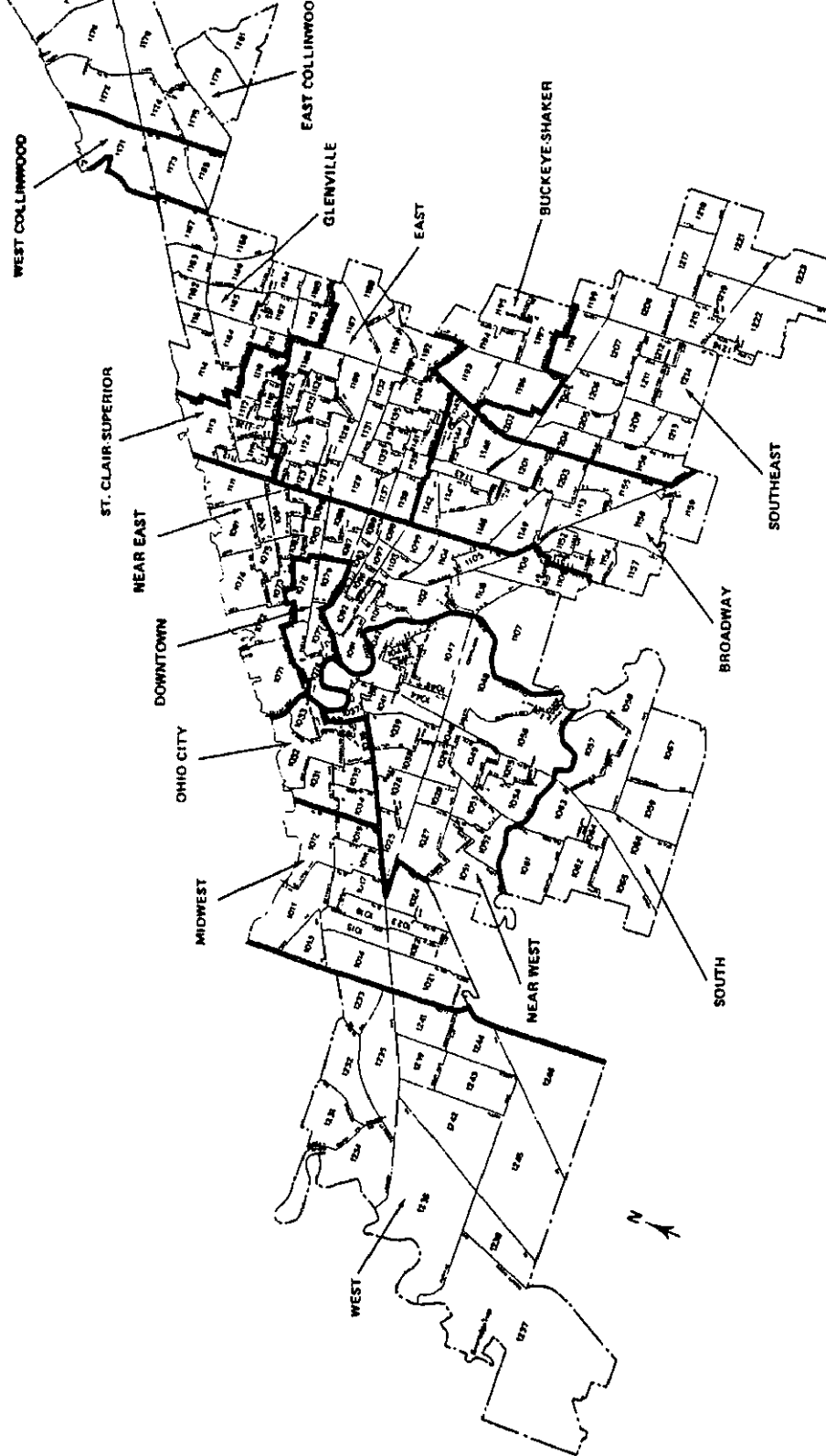
### HMDA and Government-backed Loans

Obtaining. Financial institutions prepare loan disclosure statements within ninety days of the close of each calendar year. Institutions are required to provide copies upon request and may impose a reasonable charge for the cost of reproduction.

Legislation to renew the Home Mortgage Disclosure Act in 1980 specifies that federal regulatory agencies will increase accessibility of the public to disclosure information through a centralized data depository in each state. Before approaching financial institutions directly, the reader may wish to determine (by contacting a regulatory agency, Appendix C) if a central depository has been established in his or her SMSA.

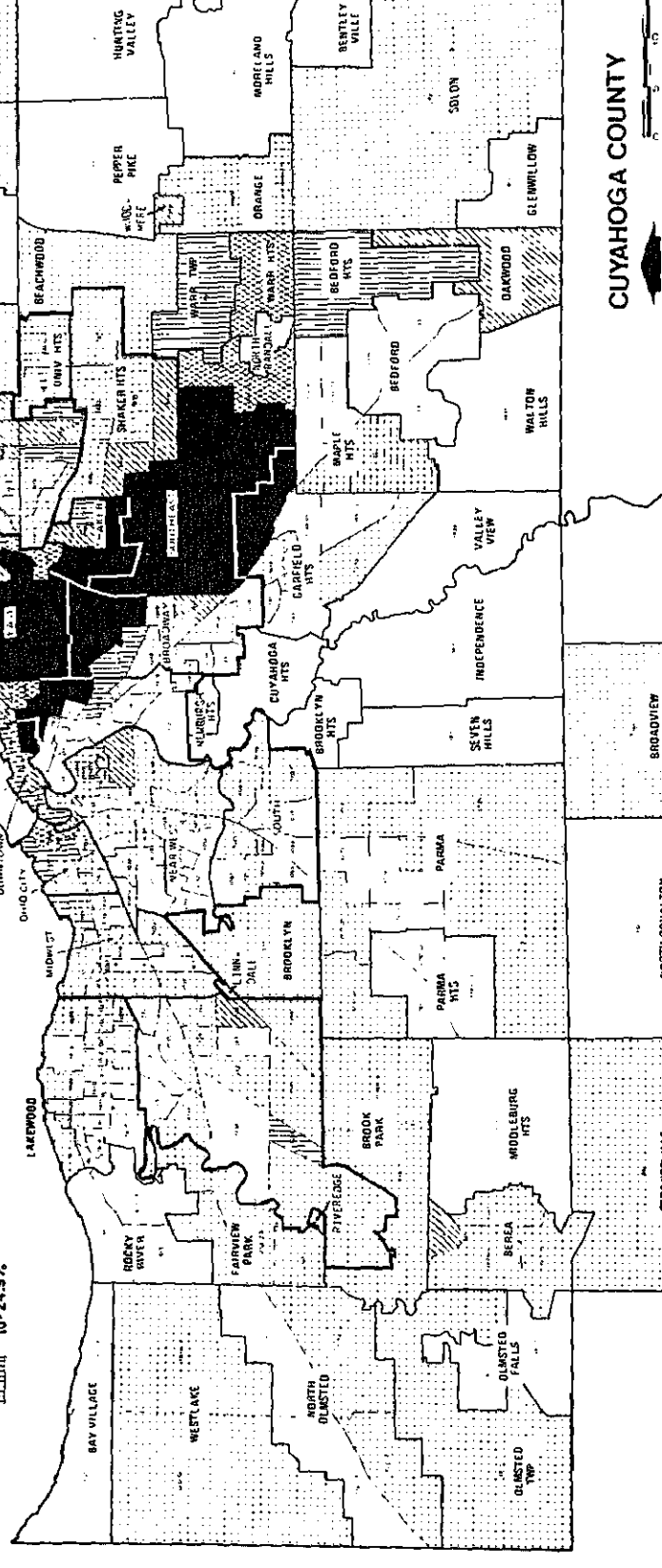
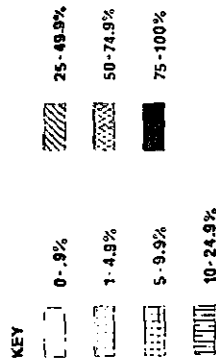
The HMDA renewal legislation also specifies that the U.S. Department of Housing and Urban Development will disclose information on FHA-insured mortgages. This information may be obtained from the newly-established

**FIGURE N**  
**ANALYSIS AREAS (AND CENSUS TRACTS) WITHIN THE CITY OF CLEVELAND**





**FIGURE P**  
**PERCENT NONWHITE - 1977**  
**(CUYAHOGA PLAN ESTIMATES)**



centralized depositories, HUD area offices or a computer tape can be obtained from Management Information Systems Division, HUD-FHA, Washington, D. C. (Appendix C). This tape (Master Statistical Case File F3019M for whatever counties requested) contains extensive information on FHA-insured properties (except the name of the mortgagor, FHA case number and the house number portion of the property address). There is a nominal charge for the tape.

The Veteran's Administration is not required under HMDA to make available information on the mortgages it guarantees, nor does VA record in its files the census tract location of properties.

It should also be noted that the 1980 HMDA legislation requires the Federal Financial Institutions Examination Council to do certain annual compilations of HMDA data for all SMSAs. The reader may wish to investigate the extent of progress on implementing this service.

Preparing. Prior to the legislative renewal of HMDA in 1980, the use of disclosure statements was suggested but not required. With the renewal, however, a standard format is to be used. Figure Q shows the pre-renewal suggested form, which is likely to be similar to the new standard form.

Institutions report loans as "originations," "purchases" or "participations" (see p. 54 for definitions). The vast majority of reported loans are likely to be originations, and few, if any, will be participations. Each of these categories is also reported in two sections. Section I includes loans relating to residential property located within the relevant SMSA, and contains loans by census tract and type (i.e., government-secured mortgage, conventional mortgage, home improvement, multi-family mortgage,





Section II includes loans relating to residential property located outside the relevant SMSA, not by census tract but as totals for each type.

The first step in preparing HMDA data for compilation either manually or by computer (and if by computer, the first task will be to code the data for keypunching) is to decide which counties will be included in one's analysis (if the SMSA has more than one county). Loan compilation would then be in terms of each of those counties, with all other loan principal amounts (including those given in any Section II) lumped into a category of "other" (see Figure J).

With these counties in mind, one should then inspect each page of each disclosure statement, ensuring that the tract identification and county location of all loans are clear. Where a ZIP Code is given instead of a census tract, one should identify the county of the loan so that such loans may be included in county totals. One may also wish to consider arbitrarily assigning a census tract within the ZIP to such loans.

In the same inspection, one should give particular attention to the column headed "Addendum Item, Non-occupant Loans." This column is meant to include loans to property owners who do not, or intend not to, live in the property for which the loan is made. It is an addendum item because any loan listed should also be listed under another category (except multifamily). In practice, however, some lenders report non-occupant loans only in that column; others report them in two columns; others report no non-occupant loans at all. One usually can determine what was done by comparing the numbers given in the non-occupant column with the numbers under the other columns on the same line. When it is apparent that the lender has

should be added to the "Other Residential, Conventional" column. Other one should disregard what is given in the non-occupant column.

If disclosure statements are to be coded for keypunching, Section figures need not be coded, as they can best be tallied by hand and added to the "other" (i.e., outside the counties of one's analysis) category of investment dollars. Also, the column headed "Total Residential Mortgage Loans" need not be coded, as this column contains the totals of the first two loan columns (FHA/VA and Conventional)--and the computer can provide these totals, if needed.

Some institutions report loan principal amounts to the penny while others report loans rounded to the nearest thousand dollars. The reader is encouraged to save time, with no loss of significance, by rounding and recording all loans to the nearest thousand.

Time Requirement. As a guideline, the 1977 HMDA reports of 38 Cleveland area institutions required 200 person/hours to code for computer keypunching. The punching of 10,000 cards then required 75 person/hours.

### Property Deed Transfers

Obtaining. Records of property deed transfers and mortgages are kept at the office of county auditor or recorder. Deed transfer and mortgage records may exist separately or as a combined file. In either case, use of this information for highly populated counties will likely depend on its availability in computerized form. Otherwise, manual tabulation would be required--and with deed transfers running into the thousands over the course of a year (24,000 residential transfers in Cuyahoga County, Ohio

counts can easily be done for relatively small neighborhoods or subareas, so the absence of computerized records should not automatically mean nothing can be done. A modified design involving selected areas could be devised.

If information on mortgages is readily accessible, then all sources of loans (those in addition to HMDA-reporting institutions) can be identified and a complete profile of investors in residential properties can be constructed. In some areas of the country, deed transfer and mortgage information is compiled by private firms (title companies) and they represent a possible source. Local real estate companies will know of such sources. An additional source of valuable information can be the local board of realtors, which might have computer files of properties listed for sale. With this information, a three-way comparison can be made between properties for sale, properties actually sold and mortgage loans.<sup>9</sup>

Preparing. Deed transfer information required for calculating L/T ratios is the number of transfers of 1-4-family properties that occurred during the year of analysis, for each census tract in the area being analyzed. All types of properties--residential, commercial, industrial, vacant, etc.--are involved in deed transfers. Residential properties must be separated from the others. Further, 1-4-family properties need to be separated from all other residential. Property type might be identified by a "land use code" (such as "1" for 1-family, "2" for 2-family, etc.) enabling the required selecting to be done. And lastly, all property transfers are not the result of a sale. For example, a "quit claim" transfer is the result of a joint owner of a property relinquishing ownership. The reader

should become familiar with the types of transfers contained in the transfer file and eliminate those that are not legitimate sales.

Other information on deed transfer files probably will include: the identifying number of the parcel, the parcel address, the name and address of the owner (who may not live at the parcel address), sales price and appraised tax valuation.

Information on mortgage files should include: parcel number and address, name and address of owner (mortgagor), mortgage amount, name of the mortgage source (mortgagee), loan term and interest rate.

It is unlikely that deed transfer or mortgage files will identify the census tract within which a property is located. But tract location is essential for comparing transfers with HMDA-reported loans. The Census Bureau has developed a computerized geocoded address file which can be used to assign tracts to addresses and is available for urbanized portions of metropolitan areas. Tapes and documentation for the Geographic Base File/Dual Independent Map Encoded (GBF/DIME) File can be obtained through the U.S. Bureau of the Census (Appendix C) or one's "State Data Center."

After deed transfers for residential properties have been assigned census tracts, the number located in each tract can be totaled. L/T ratio can then be calculated--along with average and median sales prices and turnover rates.

If deed transfers simply cannot be given census tract numbers, the reader is advised to consider the possibility of using the geographic subareas employed by the county records office. Combinations of these subareas might in some cases serve as an acceptable alternative. If so,

transfers can then be aggregated by the parcel number associated with each subarea.

Time requirement. Obtaining and processing deed transfers (and if possible, mortgage and for-sale files) should be the single most time-consuming portion of the project--in the order of 50% of total. For a project of the size referred to in the guidebook, that would amount to 6 person/months (out of a total of 12). However, once done and the technical systems are understood, processing time for succeeding years should be greatly reduced.

### Demographic Data

Economic (income), social and housing characteristics of residential areas can be obtained from a number of sources and used to plan and monitor investment programs.

Census data. The U. S. Census of Population and Housing contains information (by tract, in written report or on tape) covering:

- Racial and ethnic composition of populations
- Occupational and income characteristics
- Extent of housing ownership
- Age of housing stock and size (in terms of units: 1, 2, 3 and 4, 5 to 49, 50 or more).

As census data age, they become less valid as indicators of current conditions. The availability of fresh 1980 census data will obviate this problem for a few years.

Other sources. Most metropolitan areas have additional sources for

appropriateness for the HMDA analysis project. In the Cleveland area, for example:

- Cuyahoga Plan of Ohio, Inc., reports annually the estimated percent non-white population in all census tracts within the county. Estimates are the result of a methodology which utilizes annual birth and death data. The Cuyahoga Plan also compiles school enrollment statistics, which is another source of data on the racial composition of communities.
- Northern Ohio Regional Information Center publishes an annual report on family and housing characteristics for all county census tracts. The report is the result of a yearly observational survey and gives statistics on the number of residential dwellings by type, occupancy, new construction, etc.
- The local electric utility is a source for statistics on most-recent new construction (to update counts of existing structures). Hookups for electrical service represent actual new construction, while building permits represent theoretical construction which could occur next week or next year.
- Private firms such as R. L. Polk & Co. and National Planning Data Corporation provide information on income and social characteristics of communities.

Preparing/time requirement. Preparation of the above types of data is a relatively straight forward task. After surveying the information available, and determining what will be used, some coding and keypunching will be required particularly if statistical correlations are to be done. The size of this task will, of course, depend on the amount of information to be processed, but in any case will be minor in relation to the HMDA actual transfer tasks.

## Deposit Data

Obtaining. Data on deposits held by banks can be obtained from:

Federal Deposit Insurance Corporation  
Data Request and Survey Section  
550 17th Street, N.W., Room 3008  
Washington, D.C. 20429  
(202) 389-4701

FDIC reports deposits held at each office of the bank(s) requested, as of June 30 of the year(s) specified by the requestor. (Banks report their deposit balances to FDIC once a year, on June 30.) There is no charge for this service.

Deposits held by savings and loan associations can be obtained from:

Federal Home Loan Bank Board  
Office of Policy and Economic Research  
Information Disclosure Section  
1700 G Street, N.W.  
Washington, D. C. 20552  
(202) 377-6138

FHLBB reports deposits held at each office of the S & L(s) requested, as of September 30 of the year(s) specified by the requestor. (S & L's report their deposit balances once a year on that date.) A small charge is requested for this service.

Preparing. Bank deposit figures are reported in five categories:

- DIPC -- or Demand; Individuals, Partnerships and Corporations. "Demand" refers to funds in "checking" accounts. Individuals, Partnerships and Corporations refers to the source of the deposits. The category, therefore, combines checking accounts of members of the public with those of businesses and corporations.
- SIPC -- or Savings; Individuals, Partnerships and Corporations. "Savings" refers to ordinary savings accounts, ones which do not carry higher interest returns for



OIPC -- or Other IPC. "Other" refers to "time" deposits, i.e., certificates of deposit, or deposits committed for a specified period of time and earn, as a result, higher interest return. Technically, financial institutions do not refer to these accounts as "savings" accounts.

DPUB -- or "Demand, Public Funds." These are government funds, local or otherwise, in checking accounts.

TSPUB -- or Time and Savings (as defined above) Public Funds. These are government funds in ordinary savings accounts or higher interest "time" accounts.

An inconsequential category of "Other" is also given, as well as totals. Additional information on the statements includes office location and date established. (NOTE: All dollar amounts given on the FDIC and FHLBB statements are in thousands, i.e., three zeros have been omitted.)

S & L deposit statements contain only one figure: all savings capital. Regular savings and time accounts are combined, as well as any public funds. S & L's are beginning to offer what amounts to checking account service through "Negotiable Orders of Withdrawal," but no distinction is made between "savings" or "demand" funds. Other information on the statement includes full office address and type of institution (i.e., federal or state-chartered).

In order to make deposit figures of banks most comparable with those of S & L's, the reader is advised to disregard the categories of DIPC, DPUB and TSPUB. Funds in bank demand (checking) accounts typically are not used for the long-term investment represented by residential mortgages. Neither are deposits of government funds.

A second reason for excluding government funds is that the amount of such funds held by banks is usually much larger than that held by S & L's. Therefore, inclusion of public funds in the deposit total of banks is

likely to introduce greater distortion in bank/S & L comparability than exclusion.

Figures to use for determining commercial bank deposits, therefore, are those in the SIPC and OPIC categories. If the geographic area of analysis is a county, simply total the two categories for all offices within the county.

I/D ratio. Figure J (far right column) contains the ratio of all outstanding loans secured by residential properties (conventional and government-insured) to total savings and time deposits. Information on "outstanding loans" can be obtained from financial institution "Reports Condition" (or "Call Reports") filed with federal regulatory agencies. Banks report four times a year with information as of the last day of the calendar quarter. S & L's report semiannually.

S & L "Semiannual Report--Statement of Condition" can be obtained from the district office for the state within which the S & L is located (See Appendix C. A small service charge is requested.) Section A ("Assets") of this report lists the amounts the institution has yet to collect on mortgage loans made on residential properties--see Figure R. The amounts given under "Mortgage Loans and Contracts" are totals of all outstanding loans (loans made last week or 20 years ago) and are categorized by "VA," "FHA-HUD" and "Conventional." VA is subcategorized by "Single-family" (\$7,797,000 in the example) and "Other" (\$167,000). FHA-HUD and Conventional are subcategorized by "Single-family," "2-4 Dwelling Units," "Over 4 Dwelling Units." One can either disregard investment in "Over 4 Dwelling

OCTOBER 31, 1979

# SEMIANNUAL REPORT STATEMENT OF CONDITION - SECTION A ASSETS

DISTRICT 05 DOCKET NO. 1  
NAME  
CITY CLEVELAND  
TYPE ASSE INSURED STATE STOCK

STATE OH

MORTGAGE LOANS AND CONTRACTS  
TOTAL GROSS..... 304,339  
TOTAL LESS VALUATION ALLOWANCE..... 304,312

VA LOANS - TOTAL..... 7,965  
SINGLE-FAMILY..... 7,797  
OTHER..... 167

FHA-INS. LOANS - TOTAL..... 2,283  
SINGLE-FAMILY..... 2,225

2-4 DWELLING UNITS..... 58  
OVER 4 DWELLING UNITS..... 0

OTHER IMPROVED REAL ESTATE..... 0  
LAND LOANS..... 0

OTHER LOANS..... 0  
CONVENTIONAL LOANS - TOTAL..... 287,789

SINGLE-FAMILY..... 225,092  
2-4 DWELLING UNITS..... 15,772

OVER 4 DWELLING UNITS..... 22,684  
OTHER IMPROVED REAL ESTATE..... 15,780

DEVELOPED BUILDING LOTS..... 1,491  
ACQUISITION AND DEVELOPMENT OF LAND..... 6,257

UNIMPROVED LAND..... 6,257  
NONCONFORMING LOANS TO FACILITATE SALE OF REAL ESTATE..... 0

SALE OF REAL ESTATE..... 32  
ACCUMULATED INTEREST RECEIVABLE..... 531

ADVANCES FOR BORROWERS TAXES AND INSURANCE..... 85  
VALUATION ALLOWANCE..... 26

OTHER LOANS - TOTAL GROSS..... 2,374  
TOTAL LESS VALUATION ALLOWANCE..... 2,374

UNSECURED CONSTR. LOANS..... 0  
LOANS ON SAVINGS ACCOUNTS..... 1,563

IMPROVEMENT LOANS - TOTAL..... 201  
INSURED..... 0

OTHER..... 201  
EDUCATION LOANS - TOTAL..... 188

INSURED..... 188  
OTHER..... 2

MOBILE HOME LOANS - TOTAL..... 0  
WHOLESALE..... 0

RETAIL-INSURED..... 0  
RETAIL-OTHER..... 0

EQUIPPING AND CONSUMER LOANS..... 395  
OTHER..... 5

ACCUMULATED INTEREST RECEIVABLE..... 21  
VALUATION ALLOWANCE..... 0

REAL ESTATE  
TOTAL GROSS..... 200

TOTAL LESS VALUATION AND DEPRECIATION ALLOWANCE..... 152

REAL ESTATE OWNED..... 200

REAL ESTATE IN JUDGMENT..... 0

OTHER REAL AND REPOSSESSED PROPERTY..... 0

DEPRECIATION ALLOWANCE..... 0

VALUATION ALLOWANCE..... 46

(AMOUNTS IN THOUSANDS OF DOLLARS)  
PENDINGS SURTOTAL OR TOTAL

OTHER REAL ESTATE

TOTAL GROSS.....

TOTAL LESS VALUATION AND DEPRECIATION ALLOWANCE.....

HELD FOR DEVELOPMENT/INVESTMENT.....

CUM. INT. CAPITALIZED TO BE HELD FOR DEVELOP.....

OTHER.....

DEPRECIATION ALLOWANCE.....

VALUATION ALLOWANCE.....

CASH AND INVESTMENT SECURITIES

TOTAL GROSS.....

TOTAL LESS VALUATION ALLOWANCE.....

ELIGIBLE FOR LIQUIDITY - TOTAL.....

CASH AND DEMAND DEPOSITS.....

INVESTMENTS.....

ACCUMULATED INTEREST RECEIVABLE.....

FEDERAL HOME LOAN BANK STOCK.....

VALUATION ALLOWANCE.....

FIXED ASSETS

TOTAL GROSS.....

TOTAL LESS VALUATION AND DEPRECIATION ALLOWANCE.....

OFFICE BUILDING (LAND AND IMPROVEMENTS).....

LEASEHOLD IMPROVEMENTS.....

FURNITURE, FIXTURES, EQUIPMENT, AUTOS, ETC.....

DEPRECIATION ALLOWANCE.....

VALUATION ALLOWANCE.....

OTHER ASSETS

TOTAL GROSS.....

TOTAL LESS VALUATION ALLOWANCE.....

PREPAID FSLIC PREMIUM.....

PREPAYMENT TO FSLIC SECONDARY RESERVE.....

STOCK IN FUND.....

PREPAID EXPENSES.....

EQUITY INV. IN SERVICE CORP./SUBSIDIARIES.....

ACCTS. REC. SECURED BY PLEDGED SAVINGS.....

DEFERRED LOSSES ON SECURITIES SOLD.....

MORTGAGES, PARTICIPATIONS OR MISE-BACKED SECURITIES INS. OR CTD. BY AN AGENCY OR INSTR. OF THE U. S.....

GOODWILL.....

OTHER ASSETS.....

VALUATION ALLOWANCE.....

TOTAL ASSETS

TOTAL GROSS.....

TOTAL LESS VALUATION AND DEPRECIATION ALLOWANCE.....

MEMORANDUM

PORTION OF LINE 172 CAPITALIZED THIS PERIOD.....

NO. OF WHOLLY OWNED-TYPE B SERV. CORP.....

LIFE AND CONTRACTS ON OTHER THAN

These figures specify the extent to which an institution is involved in the various types of lending. And the I/D ratio--total loans outstanding to deposits held--expresses the extent of the institution's overall involvement in residential lending.

The source for bank Reports of Condition depends on the type of bank (See Appendix C for regional office addresses. Data service fees may be requested.)

- Comptroller of the Currency for federally chartered commercial banks (which will have the word "national" in their name).
- Federal Reserve Bank for national commercial banks, state commercial and mutual savings banks which are part of the Federal Reserve System.
- Federal Deposit Insurance Corporation for state chartered commercial and mutual savings banks whose deposits are insured by FDIC. (Reports of Condition for state chartered banks can also be obtained from the state superintendent of banks.)

The format of bank Reports is similar enough to that of S & L's. In the "assets" section one will find "Real estate loans secured by 1-4-family residential properties," subcategorized by "Insured by FHA or guaranteed by VA" and "Conventional"; same for multi-family (5 units or more) properties.

Time requirement. If the number of institutions and offices is large enough, computer processing of deposit figures would be helpful, which would require coding and keypunching. In any case, the task is straightforward and requires relatively little time.

Obtaining and extracting data from Reports of Condition is more time

## DATA PROCESSING

Computerized data processing greatly expands the scope of HMDA data analysis and use. The wealth of relatively detailed information for large geographic areas from diverse sources requires the aid of a computer and computer programs. (Although a computer is a great aid, and a necessity for large amounts of data, many tables, more limited in scope, can still be done manually.)

The necessary size of the computer is dependent on software requirements. The ideal would be to have access to a large installation with abundant core availability and peripheral hardware. However, a minicomputer may also be adequate, though its use could require some special efforts to handle some tasks. The important consideration is that the computer installation be able to handle a variety of tasks using available software.

Processing of HMDA and related data is accomplished in four stages each stage requiring a variety of tasks and computer programs. These stages and their associated tasks are as follows:

### Stage

### Tasks

#### I. Computerizing, Checking and Editing

- a. Coding
- b. Visual verification of coding
- c. Computerized file (cards, tape, disk) creation
- d. Edit checks including visual verification of file and range checking
- e. Record correction, insertion and deletion

#### II. File Manipulation

- a. Record selection
- b. Reformatting and reducing record length
- c. Record sorting
- d. Decoding records
- e. File merging

#### III. Analysis

- a. Frequencies and descriptive statistics

- III. Analysis (continued)
  - c. Crosstabulations
  - d. Inferential statistics
- IV. Reporting
  - a. Tables
  - b. Graphics

### Computerizing and Checking

This set of tasks varies depending upon the original form and medium of the data. HMDA data come from each financial institution in printed form, and must be transferred to a machine readable medium such as card tape or disk. Demographic data may also require computerizing.

Printed source data usually require coding on standardized coding forms. Decisions on what information is to be coded should be carefully considered as later retrieval of uncoded information could add considerable time, cost, and frustration to the project. Each coded record should be uniquely identified by a number for later retrieval and sorting.

Once coding is completed, some visual verification of the accuracy of the coded data is recommended. At a minimum this task entails checking that the data are consistently coded in the appropriate columns of the coding form. Being off one column on a coding form could, for example, introduce an error of millions of dollars in the HMDA data. Ideally, each piece of information coded would be checked against the original printed source material. The more checking at this stage of the process, the smoother the data processing will be in the rest of the study.

Once satisfied that the coded data accurately represent the original source data, the next task is to convert them to machine readable form.

medium. All keypunched records should be verified by a process which essentially re-keys the data. Differences between the original record and the re-keyed are resolved by the keypunch operator.

Original data in machine readable form may also be available--such as FHA-insured data obtainable from HUD. When requesting data on tape, it is important to state the exact specifications required by one's data processing facility. Major specifications for the tape and data include:

1. Tape density (e.g., 800, 1600, or 6250 BPI)
2. Character types (e.g., EBCDIC or BCD)
3. Number of tracks (e.g., 9-track)
4. Tape labeling convention (e.g., IBM standard labeled, non-labeled)
5. Record length (i.e., the number bytes per record)
6. Blocking factor (i.e., number of records per block)
7. Record format (e.g., fixed block or variable block)

Furthermore, such files should be fully documented so as to record layout (i.e., where the data are found on the records) and field definition (i.e., what the data are).

Once computerized, further editing may be needed. Key punching errors must be caught as well as errors not caught in earlier checks. Errors not corrected at this stage will likely be more costly and/or difficult to correct in later states of data processing.

Edit checks should include visual examination of file printouts. Column alignment can be checked, and, ideally, all values compared to the original printed source. At least some spot checking of data should be done.

Some edit checking can be done using the computer. A specialized program can be written which scans the data for values known to be out of the possible (or probable) range of values. For example, in the case where

the HMDA data institution code numbers range from one to thirty-eight, the edit check program should print any records which have institution code numbers less than one or greater than thirty-eight.

Pre-existing programs can also help in editing. Frequencies on nominal (categorical) or interval variables (e.g., institution code numbers, census tract numbers, land use code numbers) will reveal any values which should not appear. Aggregations of ratio scales (e.g., number of loans, principal mortgage amounts, sales amounts, population or other demographic counts) can be screened for total values which seem too high or too low, and which would justify re-examining the appropriate detailed data.

Correction of the data file may require record deletion, insertion or modification.

### File Manipulation

The computerized data files may require considerable processing before analysis is possible. A variety of utility programs for file maintenance and manipulation is needed. This includes a record selection routine which can separate records from the main file. For example, in the Cleveland HMDA study it was necessary to create a data file containing deed transfer records for which corrections were required to the land use codes assigned to them by the county auditor's office. The land use code for these records had been left blank or designated "NONE." This file was corrected and then merged with the original file.

Another required utility is one that can reform each of the records. Some software, such as the mapping program SYMAP, requires a predefined input format (arrangement of information on the records). It may be



necessary, therefore, to alter the format of data on data records. Furthermore, some data files may contain unneeded information on each record. Carrying this information can add considerable data processing time and cost. A record reforming utility should be able to select only desired information from each record and reduce the total record length.

At various points in the study it is necessary to sort file records according to one or more criteria. Before aggregating records or geocoding (e.g., assigning census tract numbers) it is necessary to sort them so that all records of one kind are placed together in the file in ascending or descending order. A sort routine must be able to sort on numeric or alphanumeric characters.

The assignment of property deed transfers to census tracts is one of the more complex tasks in the study. It may be accomplished by using the GBF/DIME File (address matching software developed by the U. S. Bureau of the Census) and a complement of other file manipulation utilities which sort, reform and select records.

The GBF/DIME File contains records which (mostly) represent street segments. Each of these street segments is associated with address ranges for both sides of the street, as well as with various geographic area code numbers for such areal units as census tracts, minor civil divisions, and counties--again for both sides of the street segment.

The GBF/DIME File, then, provides a correspondence file for different levels of geography and for ranges of street addresses. It can be used as a reference file to associate specific property addresses with their appropriate census tracts.

Address matching is accomplished with the aid of software developed by the Census Bureau for this purpose. ZIPSTAN standardizes the address information in both the data file (e.g., deed transfer file) and the reference file (e.g., GBF/DIME File). The program converts street prefixes and suffixes, for example, to standard form. The suffix "Avenue" may be abbreviated as "ave", "av", or spelled out entirely. ZIPSTAN can convert all these conventions to "av" in both the data and reference file, and thereby make possible an exact match and a correct assignment of tract number to the street address. Similarly, the street names "Ninth" or "9th" may be standardized as "9th."

Once both the data and reference files have been standardized and stored, another program, UNIMATCH, is used to search the reference file records for the one record with the address range into which the data record street address number falls. Odd or even street numbers determine on which side of the street the property is located. The census tract (or other geocoded areal unit) on the correct reference record (street segment) is associated with a specific property address in the data file.

This matching process does not necessarily require perfect correspondence between data and reference file address information. Greater or lesser weights (importance) can be assigned to the various components of an address. The user can specify, for example, that the match is sufficient if the street name is proper and the address range for the property is found in the reference file. An exact match on street name suffix such as road, street, or avenue may be deemed less important in the matching criteria. It is recommended that the matching process include at least two steps:

with a reference file record (and thereby be assigned a census tract number). Rejects (unmatched records) result from improper or incorrect address information in either the data file or the reference file. Incorrect street name spellings and missing or out-of-range house numbers on the data file are typical causes of rejects. The effectiveness of the geocoding process is dependent on the quality and coverage of the reference file and the accuracy and completeness of the data file.

In the 1977 city of Cleveland matching process, rejects accounted for some six percent of all the deed transfer records. Yet this six percent meant that approximately 500 property deed transfer records could not be tracted via the GBF/DIME File, and had to be matched manually using local sources of street address information.

Finally, two or more data files may need to be merged into one file. Examples include: (1) the combination of different years of HMDA data, in order to calculate rates of change; (2) the merger of two or more files of deed transfer records covering separate portions of a year, or the two or more years being used in the analysis; and (3) the merger of demographic data, HMDA data and deed transfer data (aggregated to census tract totals) so that L/T ratios can be computed or statistical analysis can be performed using the various kinds of data at once.

### Analysis

The analysis of HMDA and HMDA-related data involves generating summary statistics, including frequencies, means, sums, crosstabulations, and

perhaps various inferential statistics if the study includes more sophisticated explanatory analysis (see, for example, APPENDIX B). The number of single-family deed transfers for each census tract is an example of a frequency distribution. The average (mean) sales value of single-family properties is also an important statistic in the study.

The ability to crosstabulate interval or categorical information is also necessary. Major land use categories could, for example, be cross-tabulated with sales value categories and/or census tracts.

The use of inferential and multivariate statistics (such as regression analysis) for modeling the residential lending pattern with HMDA and HMDA-related data requires computer software as is available in large software packages such as SPSS, SAS, BMDP and others. Several of these large software packages are also capable of some or most of the file manipulation and analysis procedures discussed above.

### Reporting

The computer can also assist the study by generating some tables and graphics. The most efficient use of the computer in producing tables and graphics is when similar tables or graphics for a number of geographic areas are required. One-time tables, maps, or charts probably are not conducive to computer production. The advantage of computer generated material is that it can be reproduced quickly and accurately. Computer generated tables also eliminate typing errors, although they require the confidence that the computerized input data are accurate.

Figure G is an example of a computer generated table which is flexible in its ability to generate exactly the same table format for

different years. The program is written for a special purpose. Other software packages are available which allow the user to custom design virtually any table desired (see APPENDIX A).

Computer graphics is a rapidly growing field of technology. A number of software programs and packages have been developed to create pie charts, bar graphs, scattergrams, and maps of various kinds. Figures B and C are examples of computer-made maps of HMDA-related information. The program used is SYMAP. While the user of this program is not required to be a programming specialist, such expertise can be employed in optional features of the program. It is recommended, however, that the user should be familiar with basic cartographic and map design principles.

Most "canned" programs for computer-made tables or graphics require little programming experience. The user is required to supply the raw data and the parameters and some design decisions.

U. S. Department of Housing and Urban Development (Office of Policy Development and Research). A Guidebook: Home Mortgage Disclosure Act and Reinvestment Strategies. (Washington: U. S. Government Printing Office, 1979).

For a comprehensive treatment of CRA and its use, see the three-part series: U. S. Department of Housing and Urban Development. A CRA Guidebook: Assessing Community Credit Needs; A CRA Guidebook: Local Reinvestment Strategies; A CRA Guidebook: Neighborhood-Based Reinvestment Strategies. (Washington: U. S. Government Printing Office, 1980).

For case studies on the use of HMDA data in relation to real estate activity, see HUD, op. cit., A Guidebook: Home Mortgage Disclosure Act and Reinvestment Strategies.

For documentation and description of the dynamics of conventional and government-secured lending in neighborhoods see: U. S. Department of Housing and Urban Development (Office of Policy Development and Research). Role of the Real Estate Sector in Neighborhood Change. (Springfield, Virginia: National Technical Information Service, January, 1979.)

<sup>5</sup>In 1977, participants in the residential mortgage market divided the national market (in terms of loan dollars originated) as follows: savings and loan associations, 53.8%; commercial banks, 22.1%; mortgage companies, 13.5%; mutual savings banks, 5.9%; miscellaneous lenders, 4.7%. The market share split in any given locality can vary significantly from these national figures. For example, in 1977 mortgage companies had shares of 15.7% in San Diego County California; 5.3% in Cook County (Chicago) Illinois; and 9.4% (for mortgage and miscellaneous companies combined) in Erie County (Buffalo) New York. JRB Associates, Inc. Analysis of Home Mortgage Disclosure Act Data from Three Standard Metropolitan Statistical Areas; COMPLETENESS: An Estimate of the Total Volume of Residential Mortgage Loan Originations and Percentage Attributable to Depository Institutions Subject to Federal or State Disclosure Reporting, p. 6-2. A report prepared for the Federal Home Loan Bank Board and the Federal Deposit Insurance Corporation. (McLean, Virginia, 1979). For information on this report contact Office of Community Investment, Federal Home Loan Bank Board, Washington, D.C., 20552.

<sup>6</sup>For a thorough review of federal anti-discrimination acts and regulations governing depository institutions, and of use of both HMDA and demographic data for assessing financial institution compliance, see: JRB Associates op. cit. COMPLIANCE ANALYSIS: Use of Home Mortgage Disclosure Data to Determine Compliance with Anti-discrimination Laws and Regulations.

<sup>7</sup>Ibid., p. 4-17

<sup>8</sup>Ibid., p. 4-27

<sup>9</sup>JRB Associates, op. cit., COMPLETENESS discusses obtaining deed transfer data from county offices or title companies, data processing and associated problems. This report is recommended to those who plan to utilize deed transfer data.

APPENDIX A

This appendix provides details and examples for several data processing procedures mentioned in Chapter 2. These procedures include:

1. Reporting HMDA data in a standard and easily readable format;
2. Correcting/updating data files using UNIMATCH;
3. Assigning geographic area codes to census tracted records; and
4. Assigning census tract numbers to street addressed records with GBF/DIME, ZIPSTAN and UNIMATCH.

In several instances, example job-set ups are provided to assist those who might use ZIPSTAN and UNIMATCH. These examples are meant to supplement documentation for the programs supplied by the Census Bureau and referenced in Figure A-7.

### Standardized HMDA Data Reports

One of the basic needs in using HMDA data is to print the information by geographic area in a standard, easily readable format. Shown in Figure A-1 is a portion of a computer-printed report of HMDA data arranged by census tract. All institutions that reported loans in the tract are listed, as well as type of loan (origination, purchase, or participation), number and principal amount (in thousands of dollars) for each loan category. Non-occupant loans have been added to conventional 1-4-family financing (when inspection of the disclosure statement showed that the lender did do that). Totals for the tract are provided at the end of each tract listing. The program also prints a table of areawide totals and a page index.

The production of this tract report requires three pre-processing steps for HMDA data:

1. File Formatting. The report-generating program requires a particular fixed format for the input data. This step also includes any necessary record deletion (e.g., only tracts in a particular county or city) and the addition of the non-occupant loan data to that of the conventional 1-4-family category.
2. Record Aggregation. Each record must be unique in terms of census tract number, institution code, and code for



before aggregating.

3. Zero Filling. The reporting program is written in COBOL and, therefore, cannot tolerate blank spaces on the records. Zeros must be substituted.

The second and third steps (except for sorting) are accomplished by two pre-processor programs. These and the final report generating program are available upon request from Northeast Ohio Areawide Coordinating Agency (see Appendix C).

Figures G and H of the text also display HMDA data by geographic area but additionally, they provide totals and percentages, including institution market share. The program which produced these tables is written in FORTRAN and is available from the Northeast Ohio Areawide Coordinating Agency (Appendix C).

#### Record Correction/Update Using UNIMATCH and Subarea Code Assignment Using SUBAREA

In a number of situations it may be necessary to transfer information from one file to another. This task is best accomplished using record linkage software such as UNIMATCH. These situations include:

1. Record Correction and Update. A file may contain many records for which a particular field requires correction. In the Cleveland study the property transfer file was found to contain a number of records with a missing land use code. A separate file was created which contained the unique parcel number and correct land use code for those records. UNIMATCH was used to assign the corrected code to the original file. The control cards and the JCL (Job Control Language) required to perform this task are shown in Figure A-2.
2. Census Tract Assignment/Address Matching. The assignment of census tract numbers to street addressed information, such as property transfers, is discussed in detail in a separate section of this appendix.
3. Subarea Code Assignment. The census tract level of geographic area may be too small for reporting some data, thus requiring aggregation of tract information to municipal units, counties or other subareas (such as neighborhoods). For this purpose a correspondence file is necessary, specifying the subarea to which each census tract belongs. The subarea assignment can be accomplished with UNIMATCH or other record linkage software. The control cards (and JCL needed) for this procedure can be adapted from the example provided

for record correction and updating found in Figure A-2. Figure A-3 provides a source listing of a specialized FORTRAN program, SUBAREA, which assigns subarea codes to census tracted records. SUBAREA can be used if UNIMATCH (or other address matching program) is not available, although it is not as efficient nor versatile as record linkage programs written in other languages. (For assistance in utilizing SUBAREA contact the Northeast Ohio Areawide Coordinating Agency; see Appendix C.)

### Census Tract Assignment

The assignment of census tract numbers to records containing street address information is accomplished with a GBF/DIME File and two computer programs produced by the Census Bureau, ZIPSTAN and UNIMATCH. UNIMATCH consists of three separate programs: a compiler, an assembler, and an executor. The compiler, UNIMATC, is the program in which the user specifies the control demands and file characteristics. The assembler, UNIMATA, assembles these commands into executable machine instructions and allocates work space necessary to execute them. The executing program, UNIMATE, processes the data and reference (GBF/DIME) files using the selected commands and allocated space. In addition, one other program is required, a sorting utility, since both data and reference files must be pre-sorted for the UNIMATCH system.

The record layout for a DIME File is provided in Figure A-4. Details about GBF/DIME can be obtained from the Geography and Users Services Division of the Census Bureau (see Appendix C). Documentation for ZIPSTAN and UNIMATCH are also available from the Census Bureau. Figures A-5 and A-6 are provided as example job set-ups (on an IBM system) for standardizing a data file and DIME reference file, respectively. Figure A-7 shows an example job set-up for address matching and census tract assignment of a one-county deed transfer data file. These examples would likely need some modification for other applications.

**FIGURE A-1**  
**EXAMPLE OF STANDARDIZED HMDA REPORT**  
**BY CENSUS TRACT**

1978 CUYAHOGA COUNTY HMDA DATA BY CENSUS TRACT

CENSUS TRACT # 1169.00

INSTITUTION	1-4 FAMILY (PRINCIPAL & IN-DEED'S)								TOTAL PRINC
	FHA CR VA		CONV.		HOME IMP.		MULT. FAM.		
	NO.	PRINC.	NO.	PRINC.	NO.	PRINC.	NO.	PRINC.	
BANK A									
ORIGINTNS	0	0	0	0	1	4	0	0	4
TOTALS	0	0	0	0	1	4	0	0	4
BANK B									
ORIGINTNS	0	0	1	7	8	31	0	0	38
PURCHSD	0	0	0	0	10	19	0	0	19
TOTALS	0	0	1	7	18	50	0	0	57
BANK C									
ORIGINTNS	0	0	0	0	6	13	0	0	13
TOTALS	0	0	0	0	6	13	0	0	13
BANK D									
ORIGINTNS	0	0	0	0	2	8	0	0	8
PURCHSD	0	0	0	0	33	142	0	0	142
TOTALS	0	0	0	0	35	150	0	0	150
BANK E									
ORIGINTNS	0	0	0	0	1	1	0	0	1
TOTALS	0	0	0	0	1	1	0	0	1
S & L A									
ORIGINTNS	0	0	1	14	0	0	0	0	14
TOTALS	0	0	1	14	0	0	0	0	14
S & L B									
ORIGINTNS	0	0	1	9	0	0	0	0	9
TOTALS	0	0	1	9	0	0	0	0	9
S & L C									
ORIGINTNS	0	0	1	20	1	8	0	0	28
TOTALS	0	0	1	20	1	8	0	0	28
S & L D									
ORIGINTNS	0	0	1	22	0	0	0	0	22
TOTALS	0	0	1	22	0	0	0	0	22
S & L E									
ORIGINTNS	0	0	1	15	1	1	0	0	16
TOTALS	0	0	1	15	1	1	0	0	16
S & L F									
ORIGINTNS	0	0	0	0	0	0	1	11	11
TOTALS	0	0	0	0	0	0	1	11	11
S & L G									
ORIGINTNS	0	0	3	55	0	0	0	0	55
TOTALS	0	0	3	55	0	0	0	0	55
S & L H									
ORIGINTNS	0	0	1	10	0	0	0	0	10
TOTALS	0	0	1	10	0	0	0	0	10
S & L I									
ORIGINTNS	1	16	1	15	0	0	0	0	31
TOTALS	1	16	1	15	0	0	0	0	31
ORIGINTNS	1	16	11	167	20	66	1	11	260
PURCHSD	0	0	0	0	43	161	0	0	161
PARTICPTNS	0	0	0	0	0	0	0	0	0
TOTALS	1	16	11	167	63	227	1	11	421

**FIGURE A-2**  
**SAMPLE JOB SET-UP FOR RECORD CORRECTIONS**  
**USING UNIMATCH SYSTEM**

```
//STEP 1      EXEC  PGM=SORT
//SORTLIB    DD    DSN=SYS1.SORTLIB,DISP=SHR
//SYSOUT     DD    SYSOUT=A
//SORTWK01   DD    UNIT=DISK,SPACE=(CYL,4,,CONTIG)
//SORTWK02   DD    UNIT=DISK,SPACE=(CYL,4,,CONTIG)
//SORTWK03   DD    UNIT=DISK,SPACE=(CYL,4,,CONTIG)
//SORTOUT    DD    DSN=&DATA,DISP=(NEW,PASS),UNIT=DISK,
// SPACE=(CYL,(20,10),RLSE),DCB=(RECFM=FB,LRECL=195,BLKSIZE=3315)
//SORTIN     DD    DSN=DATA.FILE,DISP=(OLD,KEEP)
//SYSIN      DD    *
SORT FIELDS=(68,10,CH,A),FILSZ=E30000
/*

//STEP2      EXEC  PGM=SORT
//SORTLIB    DD    DSN=SYS1.SORTLIB,DISP=SHR
//SYSOUT     DD    SYSOUT=A
//SORTWK01   DD    UNIT=DISK,SPACE=(CYL,4,,CONTIG)
//SORTWK02   DD    UNIT=DISK,SPACE=(CYL,4,,CONTIG)
//SORTWK03   DD    UNIT=DISK,SPACE=(CYL,4,,CONTIG)
//SORTOUT    DD    DSN=&TREF,DISP=(NEW,PASS),UNIT=DISK,
// SPACE=(CYL,(5,5),RLSE),DCB=(RECFM=FB,LRECL=80,BLKSIZE=3280)
//SORTIN     DD    DSN=REFERENC.FILE,DISP=(OLD,KEEP)
//SYSIN      DD    *
SORT FIELDS=(1,10,CH,A),FILESZ=500
/*

//STEP3      EXEC  PGM=UNIMATC
//STEPLIB    DD    DSN=PROGRAM.LIBRARY,DISP=SHR
//SYSPRINT   DD    SYSOUT=A
//SYSWK1     DD    DSN=&WORK1,DISP=(NEW,PASS),UNIT=DISK,SPACE=(CYL,10)
//SYSIN      DD    *
LRECL        D    195
LRECL        R    80
KEYFIELD     1    10IDREF      <LOCATION OF ID NO. ON REF. FILE >
KEYFIELD     11   6CORREF     <LOC. OF VALUE TO BE TRANSFERRED >
KEYFIELD     68   10IDDATA    <LOCATION OF ID NO. ON DATA FILE >
KEYFIELD     190  6CORDATA    <LOC. OF VALUE IN DATA TO BE REPLACED >
EQUATE       FC    IDDATA IDREF
SORT         11DDATA
MATCH        IDDATA
TEST
MOVE          (E)   CORREF  CORDATA
EXIT          (E)
OUTPUT       BOTH
ENDJOB
/*
```

**FIGURE A-2, CONT.**

```
//SYSWK1      DD      DSN=&WORK1,DISP=(OLD,DELETE)
//SYSWK2      DD      DSN=&WORK2,DISP=(NEW,PASS),UNIT=DISK,SPACE=(TRK,(10,
//SYSIN       DD      DUMMY
//SYSPUNCH    DD      DUMMY
//STEP5       EXEC    PGM=UNIMATE
//STEPLIB     DD      DSN=PROGRAM.LIBRARY,DISP=SHR
//SYSPRINT    DD      SYSOUT=A
//SYSWK2      DD      DSN=&WORK2,DISP=(OLD,DELETE)
//SYSTEMP     DD      DSN=&WORK3,DISP=(NEW,DELETE),UNIT=DISK,SPACE=(TRK,(5
//DATAIN      DD      DSN=&TDATA,DISP=(OLD,DELETE)
//REFERIN     DD      DSN=&TREF,DISP=(OLD,DELETE)
//MATCHOUT    DD      DSN=CORRECTED.DATA,DISP=(,CATLG,DELETE),UNIT=TAPE
//SYSIN       DD      *
TAPE
/*
//
```

NOTE: JCL is designed for operation on an IBM 370/158 computer with a cataloged file system.

# FIGURE A-3 PROGRAM SUBAREA

```

C *****
C
C *****          PROGRAM SUBAREA          *****
C
C      ASSIGNS SUBAREA CODES TO RECORDS ON THE BASIS OF CENSUS TRACT
C      NUMBERS. INPUT REQUIRES A SUBAREA/CENSUS TRACT CORRESPONDENCE
C      FILE, TRACTED DATA FILE, AND CONTROL CARDS. OUTPUT INCLUDES A
C      REPORT OF THE NUMBER OF RECORDS IN THE DATA FILE, A FILE OF
C      MATCHED (SUBAREAED) RECORDS, AND A FILE OF UNMATCHED RECORDS.
C
C *****
C
C                      ***  INPUTS  ***
C
C* CONTROL CARDS
C
C  CARD 1: PARAMETERS
C    COLS. 1 - 5      N NUMBER OF FIELDS OF DATA TO BE READ FROM THE DATA
C                      FILE, NOT INCLUDING THE CENSUS TRACT FIELD.
C                      ALPHANUMERIC FIELDS ARE SUGGESTED. (MAXIMUM IS
C                      200, UNLESS DIMENSION FOR "A" IS INCREASED.)
C    6 - 10 NTOT      NUMBER OF RECORDS IN THE CORRESPONDENCE FILE.
C                      (MAXIMUM IS 999, UNLESS DIMENSIONS FOR "BT" AND
C                      "C" ARE INCREASED.)
C
C  CARD 2: CORRESPONDENCE FILE FORMAT
C    EACH RECORD OF THIS FILE CONTAINS A CENSUS TRACT NUMBER (C)
C    AND A SUBAREA CODE (BT) TO WHICH THE TRACT BELONGS. THE
C    LOCATION OF THE SUBAREA CODE IS SPECIFIED FIRST, FOLLOWED BY
C    THAT OF THE CENSUS TRACT. INTEGER VALUES ARE REQUIRED UNLESS
C    C, BT, AND T ARE REMOVED FROM THE INTEGER STATEMENT LIST.
C
C  CARD 3: DATA INPUT FORMAT
C    THE INPUT FORMAT CARD MUST FIRST PROVIDE THE LOCATION OF THE
C    CENSUS TRACT NUMBER ON EACH LOGICAL RECORD. INTEGER VALUES
C    ARE REQUIRED. REAL VALUES CAN BE INPUTED IF THE PROGRAM IS
C    MODIFIED BY REMOVING "T" AND "BT" FROM THE INTEGER STATEMENT.
C    THE REMAINING DATA ON THE INPUT DATA IS READ WITH "N" NUMBER
C    OF ALPHANUMERIC (OR REAL VALUE) FIELDS. THE DATA MAY ALSO BE
C    READ (AND OUTPUT) AS INTEGER VALUES IF THE "A" ARRAY IS ADDED
C    TO THE INTEGER LIST.
C
C  CARD 4: OUTPUT FORMAT
C    THE OUTPUT FORMAT CARD SHOULD REPEAT THE INPUT FORMAT AND
C    THEN SPECIFY THE LOCATION WHERE THE SUBAREA CODE IS TO BE
C    ASSIGNED.
C
C* OTHER INPUTS
C
C    1) CARD READER. UNIT NUMBER IS 5.
C    2) CORRESPONDENCE FILE. UNIT NUMBER IS 10. THERE ARE "NTOT"
C    NUMBER OF RECORDS IN THIS FILE. FILE MUST BE SORTED ON TRACT
C    NUMBER IN ASCENDING ORDER.

```

FIGURE A-3, CONT.

```

C
C      3) DATA FILE. UNIT NUMBER IS 8. RECORDS INCLUDE CENSUS TRACT
C      NUMBER AND "N" NUMBER OF OTHER DATA TO BE MOVED TO OUTPUT.
C      FILE MUST BE SORTED ON TRACT NUMBER IN ASCENDING ORDER.
C
C      *** OUTPUTS ***
C
C      1) PRINTER. UNIT NUMBER IS 6.
C      2) MATCHED (SUBAREAED) RECORDS. UNIT NUMBER IS 9.
C      3) UNMATCHED RECORDS. UNIT NUMBER IS 1.
C
C*****
C
C      *** EXAMPLE CONTROL CARD INPUT ***
C
C      CARD COLUMNS
C      1      1      2      2      3      3      4      4      5      8
C      1234567890      5      0      5      0      5      0      5      0 ... 0
C      .....
C      47 172
C      (T8,I3,T1,I6)
C      (T68,I3,T1,I6A4,A3,T71,29A4,A3)
C      (T68,I3,T1,I6A4,A3,T71,29A4,A3,T190,I6)
C
C*****
C
C      DIMENSION BT(999),C(999),A(200),FMTI(20),FMTO(20),FMTC(20)
C      INTEGER T,C,BT
C      KOUNY=0
C      LSTOP=1
C      READ(5,102) N,NTOT
102  FORMAT(2I5)
C      READ(5,100) FMTC
C      READ(5,100) FMTI
C      READ(5,100) FMTO
100  FORMAT(20A4)
C      DO 4 I=1,NTOT
C      READ(10,FMTC)BT(I),C(I)
4  CONTINUE
1  READ(8,FMTI,END=999) T,(A(I),I=1,N)
C      KOUNY=KOUNY+1
C      DO 3 J=LSTOP,NTOT
C      IF(T.EQ.BT(J))WRITE(9,FMTO) T,(A(I),I=1,N)
C      IF(T.EQ.BT(J))LSTOP=J
C      IF(T.EQ.BT(J))GO TO 1
3  CONTINUE
C      WRITE(1,FMTO) T,(A(I),I=1,N)
C      LSTOP=1
C      GO TO 1
999  CONTINUE
C      END FILE 9
C      END FILE 1
C      WRITE(6,553) KOUNY
553  FORMAT(1H0,10X,'NO. OF LOGICALS = ',I6)
C      STOP
C      END

```

**FIGURE A-4**

**GEOGRAPHIC ELEMENTS CONTAINED IN THE GBF/DIME-FILE  
AND THE CHARACTER LENGTH AND POSITION OF EACH FIELD**

**PART I**

**Geographic Elements Contained in the GBF/DIME-File  
And the Character Length and Position of Each Field**

<u>Item</u>	<u>Characters</u>	<u>Item</u>	<u>Character</u>
Street Prefix Direction	1-2	33. State Code Left	139-140
Street or Non-Street Feature Name	3-22	34. County Code Left	141-142
Street Type	23-26	35. Minor Civil Division Code/ Census County Division Code Left	144-145
Street Suffix Direction	27-28	36. Congressional District Left	147-148
Non-Street Feature Code	29	37. 1970 Area Code Left <sup>1</sup>	149-150
1970 Enumeration District Left <sup>1</sup>	30-34	38. Block Left (Basic)	152-153
Blank (Census Use Only)	35-40	39. Block Left (Suffix) <sup>2</sup>	155-156
1970 Enumeration District Right <sup>1</sup>	41-45	40. 1960-1970 Annexation Code Left <sup>1</sup>	157-158
From Map (Basic Number)	46-48	41. State Code Right	158-159
From Map (Suffix)	49-50	42. County Code Right	160-161
To Map (Basic Number)	51-53	43. Minor Civil Division Code/ Census County Division Code Right	163-164
To Map (Suffix)	54-55	44. Congressional District Right	166-167
Coding Limit Flag	56	45. 1970 Area Code Right <sup>1</sup>	168-169
Left Low Address	57-62	46. Block Right (Basic)	171-172
Left High Address	63-68	47. Block Right (Suffix) <sup>2</sup>	174-175
Right Low Address	69-74	48. 1960-1970 Annexation Code Right <sup>1</sup>	177-178
Right High Address	75-80	49. From State Plane Code	179-180
File Code	81-84	50. To State Plane Code	181-182
Record Number	85-90	51. From Map Set Mile (X Coordinate)	187-188
Check Digit	91	52. From Map Set Mile (Y Coordinate)	193-194
Census Tract Left (Basic)	92-95	53. To Map Set Mile (X Coordinate)	199-200
Census Tract Left (Suffix)	96-97	54. To Map Set Mile (Y Coordinate)	205-206
Census Tract Right (Basic)	98-101	55. From Latitude (Y Coordinate)	211-212
Census Tract Right (Suffix)	102-103	56. From Longitude (X Coordinate)	218-219
ZIP Code Left	104-108	57. To Latitude (Y Coordinate)	224-225
ZIP Code Right	109-113	58. To Longitude (X Coordinate)	231-232
SMSA	114-117	59. From State Plane (Y Coordinate)	238-239
Street Code <sup>1</sup>	118-122	60. From State Plane (X Coordinate)	245-246
From Node	123-126	61. To State Plane (Y Coordinate)	252-253
To Node	127-130	62. To State Plane (X Coordinate)	259-260
Place Code Left	131-134	63. Blank (Census Use Only)	
Place Code Right	135-138		

These fields are not supported by the CUE program and may be used by the Bureau of the Census for other uses.

The block suffix field is no longer supported by the CUE program.



**FIGURE A-5**  
**SAMPLE JOB SET-UP TO STANDARDIZE DATA FILE**  
**USING ZIPSTAN**

```
//STEP1      EXEC  PGM=ZIPSTAN
//STEPLIB    DD    DSN=PROGRAM.LIBRARY,DISP=SHR
//SYSPRINT   DD    SYSOUT=A
//TABLES     DD    DISP=(OLD,KEEP),DSN=TABLES
//INPUT      DD    DISP=(OLD,KEEP),DSN=DATA.FILE
//OUTPUT     DD    DISP=(,CATLG,DELETE),DSN=DATA.ZIPPED,UNIT=TAPE
//SYSIN      DD    *
ADDRESS      63-100
OMIT PLACE ZIP APT
SAVE         1-62 101-158
PRINT       100
TITLE=ZIPSTAN DATA FILE
END
/*
//
```

NOTE: JCL is designed for operation on an IBM 370/158 computer with a cataloged file system.

**FIGURE A-6**  
**SAMPLE JOB SET-UP TO STANDARDIZE REFERENCE FILE**  
**(GBF/DIME) USING ZIPSTAN**

```

/STEP1      EXEC  PGM=ZIPSTAN
/STEPLIB    DD    DSN=PROGRAM.LIBRARY,DISP=SHR
/SYSPRINT    DP    SYSOUT=A
/TABLES      DD    DISP=(OLD,KEEP),DSN=TABLES
/INPUT       DD    DISP=(OLD,KEEP),DSN=DIME.FILE
/OUTPUT      DD    DISP=(,CATLG,DELETE),DSN=DIME.ZIPPED,UNIT=TAPE
/SYSIN       DD    *
ADDRESS      1-28
NUMBERS      57-62  63-68  69-74  75-80
MIT PLACE   ZIP APT
AVE          92-103  141-146  160-165
RINT         100
LIST
TITLE=ZIPSTAN REFERENCE (GBF/DIME) FILE
ND
*
/

```

**NOTE:** JCL is designed for operation on an IBM 370/158 computer with a cataloged file system.

**FIGURE A-7**  
**SAMPLE JOB SET-UP FOR CENSUS TRACT ASSIGNMENT**  
**USING UNIMATCH SYSTEM**

```
//STEP1      EXEC  PGM=UNIMATC
//STEPLIB    DD    DSN=PROGRAM.LIBRARY,DISP=SHR
//SYSPRINT   DD    SYSOUT=A
//SYSWK1     DD    DSN=&CONTROL,DISP=(NEW,PASS),UNIT=DISK,SPACE=(TRK,
//SYSIN      DD    *
LRECL        DS    181
LRECL        R     93
KEYFIELD     9     7LLOW      <LEFT LOW RANGE>
KEYFIELD     16    7HIGH      <LEFT HIGH RANGE>
KEYFIELD     9     7LHOUSE    <HOUSE NO. IN DATA FILE>
KEYFIELD     9     7RHOUSE    <HOUSE NO. IN DATA FILE>
KEYFIELD     23    7RLOW      <RIGHT LOW RANGE>
KEYFIELD     30    7RHIGH     <RIGHT HIGH RANGE>
KEYFIELD     23    33STRD     <DATA STREET NAME - PREFIX & SUFFIX>
KEYFIELD     37    33STRR     <DIME STREET NAME - PREFIX & SUFFIX>
KEYFIELD     85    3CITYR
KEYFIELD     60    6LTRACT
KEYFIELD     76    6RTRACT
KEYFIELD     176   6DTRACT
KEYFIELD     127   3CITYD
KEYFIELD     82    3CNTY
EQUATE       RP    LHOUSE    LLOW LHIGH
EQUATE       RP    RHOUSE    RLOW RHIGH
EQUATE       FC    STARD     STRR
EQUATE       FC    CITYD
SORT         01CNTY
SORT         02CITYD
SORT         03STRD
MATCH        CNTY
MATCH        CITYD
MATCH        STRD
GROUP        NUMBER LHOUSE
              RHOUSE

ENDGRP
LEVEL        1NUMBER
ACCEPT       1NUMBER
WEIGHT       LHOUSE      1    1    1    1    1
WEIGHT       RHOUSE      1    1    1    1    1
TEST
MATCH        LHOUSE
MOVE         (E)
EXIT         (E)
```

```

STEP2      EXEC   PGM=UNIMATA
STEPLIB    DD     DSN=PROGRAM.LIBRARY,DISP=SHR
SYSPRINT   DD     SYSOUT=A
SYSPUNCH   DD     DUMMY
SYSWK1     DD     DSN=&CONTROL,DISP=(OLD,DELETE)
SYSWK2     DD     DSN=&ASSEM,DISP=(NEW,PASS),UNIT=DISK,SPACE=TRK,2)
SYSIN      DD     DUMMY
STEP3      EXEC   PGM=UNIMATE
STEPLIB    DD     DSN=PROGRAM.LIBRARY,DISP=SHR
SYSPRINT   DD     SYSOUT=A
SYSWK2     DD     DSN=&ASSEM,DISP=(OLD,DELETE)
SYSTEMP    DD     DSN=&WORK,DISP=(NEW,DELETE),UNIT=DISK,SPACE=(TRK,20)
DATAIN     DD     DSN=SORTED.DATA,DISP=(OLD,KEEP)
REFERIN    DD     DSN=SORTED.DIME,DISP=(OLD,KEEP)
MTCHOUT    DD     DSN=TRACTED,DISP=(,CATLG,DELETE),UNIT=TAPE
REJTOUT    DD     DSN=UNTRACTD,DISP=(,CATLG,DELETE),UNIT=TAPE
SYSIN      DD     *
PE
  
```

TE: This set-up assumes a number of situations including:

1. Data and reference files have been pre-sorted on county, city and street name fields, respectively.
2. The data and reference files have been pre-processed with ZIPSTAN as shown in Figures A-5 and A-6, respectively.
3. The user desires a perfect match between the house address and the address ranges in the GBP/DIME File.

The documentation manuals on ZIPSTAN and UNIMATCH are referenced below:

ZIPSTAN, General Address Standardizer, Census/UMTA Release 7.0.  
Statistical Research Division, U.S. Bureau of the Census. Washington, D.C., January 20, 1978.

UNIMATCH, A Record Linkage System: User's Manual. Bureau of the Census. Washington, D.C. May, 1978.

ce, also, that the JCL is designed for an IBM 370/158 computer with a cataloged file system.

This appendix presents methodology and statistical techniques for analyzing HMDA data. The first section provides a rationale and model for the type of analysis suggested. The second section includes technical discussion of statistical methods, while the third section gives some examples of their use.

These methods are not the only ones that can be employed with HMDA data. They are, however, powerful tools for understanding and evaluating the geographic distribution of mortgage lending in a metropolitan region. The use of these techniques is recommended if the intent of the analysis is to:

1. Explain the geographic distribution of mortgage lending;
2. Detect patterns of credit extension that may be the result of discriminatory lending practices; and
3. Identify neighborhood areas where credit extensions are fewer than might be expected on the basis of demand and risk criteria.

#### RATIONALE AND MODEL

HMDA exists to assist in the resolution of issues concerning residential investment and community and neighborhood vitality. Such issues center on whether or not lending practices of financial institutions involve discrimination on the basis of race or other non-economic factors. Financial institutions invariably maintain that the criteria used for making mortgage loans are uniform throughout their metropolitan service areas.<sup>1</sup> Areas that receive little residential investment and contain a high percentage of minority households may demonstrate little demand for loans from major lenders.

The issues are complex, as a number of factors together account for the geographic distribution of mortgage lending. A complete and definitive analysis would require detailed information on individual mortgage applications, potential applicants, and property transfers (sales). Many of these data are not publicly available. Methods of statistical analysis, therefore, are largely determined by the data that are available, as well as the intent of the analysis.

HMDA data are aggregated data. They represent information about individual loans totaled for each census tract. With aggregate data it is not possible to identify individual acts of discrimination should they occur, but rather geographic patterns which may suggest discriminatory practices.

Thus, the model presented here is designed to analyze the geographic distribution of mortgage lending in a metropolitan region on the basis of the data aggregated into census tract areal units. The model employs three kinds of variables:

1. A dependent variable, the geographic distribution of mortgage lending;
2. Independent variables which are considered (a priori) legitimate risk and market factors; and
3. Independent variables which are considered discriminatory or non-legitimate risk factors.

The determination of what constitutes legitimate or market-related factors and non-legitimate or non-market factors is left to the analyst. A legal definition of non-legitimate factors includes race, color, religion, national origin and sex. Another might include the age or location of the housing unit or the occupational status (independent of income) of the applicant.

The distinction between market and non-market factors is critical in an analysis of mortgage lending patterns. To assess the impact of non-market discriminatory factors, it is necessary to model (explain) lending patterns using explanatory variables which are considered legitimate market related determinants of investment. With this model it is possible to identify neighborhood areas which have significantly more or less investment than might be expected on the basis of market-related factors. It is also possible to determine the extent to which patterns reflect non-market factors such as race, or possibly age of housing stock and the occupational status of the area.

The form of the general model is:

$$L = f(M ; N),$$

where "L" stands for the lending pattern to be explained, "M" stands for market or legitimate risk factors, and "N" represents non-market factors which the analyst judges to be possible discriminatory factors. This general model is made operational by defining and quantifying L, M and

HMDA data are used to describe a lending pattern in a metropolitan area. The entire metropolitan area should be included in the analysis since it is important to distinguish as many housing sub-markets as possible within the larger market region. The factors which best explain geographic differences in lending involvement by HMDA-reporting institutions are more clearly evident when a number of sub-markets are included. The availability of data for "M" and "N" factors may, however, restrict the geographic extent of the study.

Although HMDA data are reported at the census tract level (and it is best to conduct the analysis at this geographic scale), data availability for independent variables may require an analysis with aggregations of census tract data to the neighborhood or community level. It should be kept in mind that the greater the aggregation, the less confident one can be in the analysis of the data. Meaningful variation among smaller areas may be hidden when they are combined into larger ones.

The dependent variables may include individual, or combinations of HMDA-reported categories. Thus, the analysis might seek to explain the spatial distribution of conventional loans on 1-4-family structures or the total dollars invested in such loans. Other analyses could focus on home improvement loans or multi-family structures with more than four units per structure.

Each analysis requires special consideration for the independent variables, as well as a good understanding of the limitations of data generated in these HMDA categories. Presented below is a model for the analysis of the number of conventional and FHA-insured loans, including those where the purchaser is a non-occupant of the property.

### Market-related Factors

Market-related independent variables should encompass all factors which measure demand or potential for loans and which lenders should legitimately consider in judging the risk of the investment).

Demand cannot be fully measured since it is impossible to document

1. Loans that might have taken place but did not because of discriminatory lending or real estate practices; or
2. Loans made by non-HMDA reporting institutions or individuals.

However, the minimum potential number of loans that HMDA-reporting institutions could have made (assuming all applicants and properties met proper underwriting standards) in a previous year is the number of residential property deed transfers that occurred. This number, in a sense, represents the minimum because with few exceptions each transaction requires a loan.

Deed transfer information is readily available for most urbanized areas. Also available is the property sales amount. When transfers are aggregated for census tracts (or larger areal units), a measure of loan potential is achieved. The average sales price of these properties can be expected to affect the number of loans, as well as the average principal amount of loans reported in HMDA data. The average sales price is an indicator of the market strength of the area and of the purchasing potential or income of the home buyers in the neighborhood.

Other market-related indices might also be included. Census information on housing, or special local housing surveys, can provide data on the general quality or condition of housing stock by geographic area. Such data, however, are not as useful as data directly related to the properties sold during the time interval covered by HMDA data.

Another factor which could be considered among the market-related determinants of lending patterns is the location of financial institution branch offices. Generally, one would expect that neighborhoods with fewer offices would receive fewer loans. One method of approximating the office location factor is to define communities which are serviced by clusters of lending institution offices. Areal units within the community can be assigned the number of offices in the larger community as an index of proximity to lending services. Areas with more offices provide greater access to lending services.

### Non-Market Factors

Non-market factors are those which might help to explain lending patterns, and which are not considered legal or legitimate considerations in risk determination. These factors are purposefully distinguished from market-factors and are treated separately in the statistical analysis discussed below.

The primary non-market factor is race, since it is often at the heart of accusations of lender discrimination and redlining. The racial composition of census tracts is provided by decennial census counts. Changes usually associated with racial transition in metropolitan areas necessitate more recent data than those provided by the 1970 Census. (At this writing, 1980 Census data on race are not available. This information should be available sometime in 1981.) Recent change in racial composition might also be included among non-market factors. Neighborhoods undergoing rapid racial transition may be perceived by lenders as areas of property value decline and high risk.

Another factor which can be considered as an important non-market factor is the age of the housing stock (savings and loan associations are prohibited by the Federal Home Loan Bank Board from making loan decisions on the basis of the age or location of a dwelling.) Older housing may be perceived as a greater risk for investment, independent



a structure might be information gleaned from property transaction files. 1980 Census data would be the next best source, but 1970 data could be employed even though demolition and new construction since 1970 could impact the analysis.

Occupational status might also be a factor in determining the investments by HMDA-reporting institutions. Lenders may perceive white-collar professionals as better risks than blue-collar workers even though the latter may earn sufficient income to warrant receiving mortgage loans. Census data for 1980 should be a good indicator of the occupational status of potential borrowers, as neighborhoods are generally homogeneous in occupational status. Except for perhaps a few communities in a metropolitan area which have undergone unique transformation in character, most communities probably have changed little in their relative occupational status since 1970. Thus, 1970 Census information should suffice until 1980 data are available.

While other non-market or discriminatory factors might also be included in an analysis of mortgage lending, some caution should be noted concerning the use of income data. Income is not a good variable to use as a discriminatory factor. Although the Community Reinvestment Act of 1977 (CRA) specifically calls attention to neighborhoods of low- and moderate-income as areas in which lenders should give proper service, the income of a loan applicant is a legitimate consideration for evaluating an application. The poor are given no special status by CRA. Lenders are to implement CRA "consistent with safe and sound operation of the institution." The wealth of the applicant should be included among the market-related factors such as the average sales price of transactions.

## METHODS

The model discussed above requires multi-variate methods of analysis. That is, lending patterns are accounted for by several independent factors (variables). The methods of analysis should:

1. Help to explain why some areas have fewer or more loans than others;
2. Identify specific market-related factors which help in that explanation;
3. Identify the relative importance of each market-related factor in the explanation;
4. Indicate how much of the lending pattern is not explained by market-related factors;

5. Identify specific areas which are not well explained by market factors;
6. Indicate how much of the unexplained lending pattern is related to non-market related factors; and
7. Identify specific areas which are not well explained by either market nor non-market factors, thereby possibly suggest other variables that might account for such anomalous areas.

The methods of multi-variate regression analysis provide a number of statistics which satisfy these needs.<sup>2</sup> Regression analysis is a statistical procedure for attempting to account for the variation found in the dependent variable by the variation found in independent or predictor variables. Two variables which covary are said to be correlated. Regression goes beyond correlation analysis in that it expresses the covariation in a causal relationship; i.e., the variation in one variable is dependent on how the independent variables vary. Thus, regression analysis has the explanatory and predictive powers that correlation analysis lacks.

Multiple regression is based on the following mathematical expression:

$$Y = A + B_1 X_1 + B_2 X_2 + \dots + B_k X_k ;$$

where Y = the dependent (or predicted) variable,  
 A = a constant,  
 $X_1$  = the first independent (or predictor) variable,  
 $X_2$  = the second independent variable,  
 $X_k$  = the k<sup>th</sup> (last) independent variable, and  
 $B_1, B_2, B_k$  = the coefficients for  $X_1, X_2$  and  $X_k$ , respectively.

This equation is solved using actual data and results in estimates of Y. The stronger the relationships between the dependent and independent variables, the more closely the estimated values approximate the actual values of Y.

Clearly, as any one of the independent variables changes so must the dependent variable. The coefficient indicates how much of a change in the independent variable is required for a unit (given) change in the value of the dependent variable. Standardized coefficients, Beta's, are important in determining the relative importance of the independent variables in accounting for variations in Y. Standardization removes the unique units of measurement usually associated with each of the independent variables. The constant, A, is simply the value of Y when all X's are zero.

which are:

1. simple r -- the correlation coefficient between two variables. It measures the association between variation in the two variables and ranges from +1.0 to -1.0, where a positive value means that as one variable increases in value so does the other; a negative value means that as one decreases the other increases; and 0.0 means that there is no pattern between variations in the two variables.
2.  $R^2$  -- the squared multiple correlation coefficient, or explained variance. It provides the proportion of variation in the dependent variable which is accounted for by the variations in the set of independent variables in the regression equation. It is computed as the ratio of the variation in Y explained by the independent variables to the total variation in Y.
3. F-ratio -- the ratio of variation within the estimated values of Y (from the regression equation) to the variation between actual and estimated values of Y. This ratio is modified by the size of the sample (number of observations or units of analysis), since a large sample size is less likely to be uniquely biased for one reason or another. A significantly large F-ratio indicates that there is relatively less difference between estimated and actual values of Y than there is variation in the expected values of Y. F-ratios are useful in determining if the addition of an independent variable to a regression equation adds significantly more explanation of Y. This is one method of determining the "significance" of the variable. The overall F-ratio for the regression equation indicates the overall significance of the set of independent variables in the regression equation.<sup>3</sup>
4. residuals -- the differences between actual and estimated values of Y. The residuals are useful in developing new hypotheses to explain the dependent variable. When the observations are geographic units such as census tracts, the residuals can be mapped. The resulting patterns of residuals may stimulate further analysis by revealing subtle associations.
5. partial r -- the correlation coefficient between two sets of residuals, one resulting from a regression between the dependent variable and a set of independent variables and another resulting from a regression between a criterion variable and the same set of independent variables employed in the first regression. This statistic indicates the degree of association between the dependent and the criterion variables, above and beyond any indirect associations they

ables. The square of the partial  $r$  provides the proportion of the variance in  $Y$  which is explained by the criterion variable independent of the effects of the other independent variables on either the dependent or the criterion variable. This explained variance is in addition to the explained variance provided by the  $R^2$  value.

### EXAMPLE

The methods discussed above are applied in a study of 1977 HMDA data in Cuyahoga County, Ohio, where the city of Cleveland and the majority of its suburbs are located.<sup>4</sup> The number of loans, conventional and FHA/VA, for residential structures with 1-4 units is modeled. This model is applied for all 38 HMDA-reporting institutions in the county as a group. Seventy-three residential areas of the county are used in the analysis. These areas include 59 suburban communities and 14 subareas (census tract aggregations) within the city of Cleveland.

The model, including market and non-market factors, is generalized as:

$$L = f(T, P, O; S, A, R, C)$$

The dependent variable "L" is the number of loans made in 1977. Among the independent (explanatory) variables are:

- "T" - The potential for loans as expressed by the number of residential deed transfers.
- "P" - The average sales value of residential properties sold in 1977 indicates the relative wealth of the buyers in a community. Wealthier buyers are assumed to be low risk.
- "O" - Number of financial institution offices. Areas with more offices provide greater access to services, both lending and depository.

These variables are considered non-discriminatory economic or market factors for making investment decisions in the county, and are allowed to enter a step-wise regression procedure.

The residuals (unexplained portions) of the dependent variable are then regressed against the residuals resulting from regressions between the three market variables and each of the non-market variables. The resulting partial correlations reveal which, if any, of the non-market variables are associated with unexplained investment patterns above and beyond their associations with market factors. Put another way, the partials assist in determining whether non-market variables help to

"A" - Age of housing stock as measured by the percent of units built in 1939 or earlier.

"R" - Race, expressed as the non-white percent of the community's population in 1977.

"C" - Change in percent non-white population from 1970 to 1977.

The first two non-market variables are taken from the 1970 Census. Racial population data for 1977 are calculated from data from 1977 racial percentage estimates for census tracts, 1976 population estimates for political units, and 1975 population estimates for census tracts.<sup>5</sup>

The results of the analysis are summarized in Table 1:

TABLE 1

ANALYSIS OF NUMBER OF LOANS ON 1-4 UNIT RESIDENCES  
BY 38 MAJOR LENDERS 1977 - CUYAHOGA COUNTY

INDEPENDENT VARIABLE  STATISTIC	MARKET			NON-MARKET			
	"T" Property Transfers	"p" Avg. Sales Price	"O" No. Office	"S" Pct. Prof. 1970	"A" Pct. Built 1939	"R" Pct. Non-white 1977	"C" Change Percent Non-wh 1970-1977
Simple r	.96	-.09	.83	-.03	-.03	-.16	.01
Multiple R <sup>2</sup> when entered	.92	.93	.94	-	-	-	-
Partial r at solution	-	-	-	.08	-.50	-.54	-.28
F-ratio at solution (3 & 69 d.f.)	279.3**	15.3**	7.1**	0.5	22.9**	27.4**	5.6**

\*Significant at .05 level of confidence.

\*\*Significant at .01 level of confidence.

In explaining the number of loans it is found that the model using market factors explains 94% of the variation in the number of mortgage loans, i.e., multiple  $R^2$  is 0.94. Three variables offer highly significant amounts of explanation of the number of loans made in 73 residential areas (note F-ratios). The potential for loans, as expressed by the number of deed transfers, explains 92% of the variation alone, i.e.,  $R^2$  is 0.92. The average sales value is also significant in explaining differences in loan activity in the county (F-ratio = 15.3); as is the number of branch offices (F-ratio = 7.1), indicating that the more offices in the area, the more loans were made.

It should be noted that the simple r statistic for average sales price is negative (-0.09), indicating that more loans were made in areas with lower average sales prices. This is due to the high volume of sales occurring in many larger suburbs and subareas of Cleveland. Nevertheless, the average sales price is positively associated with the number of loans once the effects of the volume of transfers have been removed. That is, in areas of similar volume of transfers the 38 lenders together made significantly more loans where average sales prices were higher. The partial r for average sales price is 0.40 after property transfers enters the regression equation.

These market factors together constitute an effective model for explaining the aggregate lending patterns of the major mortgage lenders in Cuyahoga County. Lenders were most active in areas where the number of deed transfers was high; average sales value was high (indicating that borrowers in these areas were more bankable and that homes were viewed as highly marketable properties), and where lenders had greater numbers of branch offices.

Also of concern is the six percent of variation in mortgage loan activity which is left unexplained by market factors. The results of the partial regression analysis are presented on the right side of Table 1. The results show that three factors may help to explain the remaining variation in mortgage lending on 1-4-family structures.

Percent of population which was non-white in 1977 explains some 25% (partial  $r = -0.54$ ) of the remaining six percent. This explanation is statistically significant, with less than one chance in a hundred that the association is a random occurrence (F-ratio is 27.4 with 3 and 69 degrees of freedom). Areas with high percentages of non-whites received significantly fewer mortgages than areas with similar market factors but with low percentages of non-whites.

A similar conclusion is reached concerning the age of housing. Among areas with similar market factors, those with higher percentages of older housing received fewer loans than did areas of new housing (partial  $r = -0.50$ ). The relationship between age of housing and number of mortgage loans is not strong (simple  $r = -0.03$ ); it is only important in distinguishing loan activity in areas of otherwise similar market character.

percent non-white population from 1970 to 1977 is also a significant factor in explaining the remaining six percent of the variation in mortgage lending not accounted for by market factors ( $F$ -ratio = 5.6). Among areas of similar market factors, the greater the increase in non-white population, the fewer the loans by the 38 institutions (partial  $r$  = -0.28).

The variable chosen to represent the occupational status of a community, percent of labor force in professional, technical and kindred occupations in 1970, is not a significant factor in explaining variation in the number of mortgage loans by community ( $F$ -ratio = 0.5) for all institutions together.

It is important to note that the explanations afforded by the three significant non-market factors are not likely to be attributable to any coincidental associations with market factors. The associations between the non-market factors and the market-related ones have been statistically removed before analyzing associations between non-market factors and the number of mortgage loans made by the lenders. Where two communities are identical in their potential for loans, in the risk to lenders that the housing represents (provided by average sales price), and in their physical accessibility to lending offices, the community with older houses and more non-white concentration receives fewer mortgage loans from major lenders. Furthermore, whereas only 2.5% of the variation in the number of mortgage loans is accounted for by the percent non-white (simple  $r$  = -0.16, some 29% of the variation in loan activity which is unexplained by market variables is explained by race alone, i.e., independent of any geographic association with the market factors. This observation indicates that lenders are greatly influenced by market considerations, but that non-market ones may also affect their lending behavior in cases of marginal bankability.

Variations in the application of the model and statistical methods may be of equal interest. The Cleveland study analyzes savings and loan associations and commercial banks separately and finds some important differences in the lending patterns of these two types of institutions. The methods used in these analyses are identical to those discussed above. Individual institutions could also be analyzed in the same way.

Some of the findings and methods in the Cleveland study are replicated in a study for the city of Chicago using pre-HMDA loan data covering the 1960 to 1973 period.<sup>7</sup> Testing what the study terms "the eco-race model," it employs very similar regression methods. The analysis includes a logarithmic transformation of the dependent variable in order to reduce some of the problems encountered when a linear model, such as the normal regression model, is employed.

1. For a more lengthy discussion of issues and for an extensive bibliography see: Mortgage Lending and Race: Conceptual and Analytical Perspectives of the Urban Financing Problem. David Listokin and Stephen Casey. Center for Urban Policy Research, Rutgers University. 1980.
2. This paper is not intended to explain the mathematical concepts of regression analysis. Rather the intent is to present some of the technical concepts as tools for analyzing HMDA data and to demonstrate their use. The reader should be cautioned that the correct use of statistical procedures such as found in regression analysis requires a solid background in statistics. Many important aspects of the method are not mentioned in this appendix. The following sources provide more information on regression:
  - Blalock, H. M. Social Statistics, 2d ed. New York: McGraw-Hill, 1972.
  - Draper, N.R. and H. Smith. Applied Regression Analysis. New York: Wiley, 1966.
3. The F-ratio is interpretable only when the sample size and number of variables involved are taken into account. This is done by the "degrees of freedom." The F-ratio and the degrees of freedom together determine the probability that the contribution of the independent variables is due to more than random chance.
4. The empirical study summarized in this appendix is found in a discussion paper: "Factors Affecting the Geographic Distribution of Mortgage Loans in Cuyahoga County, 1977." Northeast Ohio Areawide Coordinating Agency. Cleveland, Ohio. 1980.
5. The sources of these data are: "A Report on Population and Race: Estimates of the Racial Composition of Census Tracts in Cuyahoga County 1970-1977," The Cuyahoga Plan of Ohio, Inc., Cleveland, Ohio. 1979; "Population Estimates and Projections." Current Population Reports, Series P-25, No. 774. Bureau of the Census. 1979; and "Updates 1975." National Planning Data Corporation. Ithaca, New York. 1975.
6. There are correlations among the non-market factors and, therefore, one cannot view their associations with loan activity as independent of one another. The explanations of loan activity that each offers, as found in Table 1, are not cumulative.
7. See: Mortgage Lending and Race: Conceptual and Analytical Perspectives of the Urban Financing Problem. David Listokin and Stephen Casey. Center for Urban Policy Research, Rutgers University. 1980.



# APPENDIX C

## RESOURCE ORGANIZATIONS

### FEDERAL HOME LOAN BANK BOARD

Headquarters: 1700 G Street, N.W., Washington, D.C. 20552

#### Regional Offices

P.O. Box 2196  
Boston, Massachusetts  
(617) 223-5300  
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New Hampshire, Rhode Island, and  
Vermont)

P.O. Box 598  
Cincinnati, Ohio 45201  
(513) 852-7500  
(Kentucky, Ohio and Tennessee)

1400 Tower Building  
Little Rock, Arkansas 72201  
(501) 372-7141  
(Arkansas, Louisiana,  
Mississippi, New Mexico  
and Texas)

One World Trade Center - Floor 103  
New York, New York 10048  
(212) 432-2000  
(New Jersey, New York, Puerto Rico  
and Virgin Islands)

2900 Indiana Tower  
One Indiana Square  
Indianapolis, Indiana 46204  
(317) 269-5371  
(Indiana and Michigan)

P.O. Box 176  
Topeka, Kansas 66601  
(913) 233-0507  
(Colorado, Kansas, Nebraska  
and Oklahoma)

11 Stanwix Street, 4th Floor  
Gateway Center  
Pittsburgh, Pennsylvania 15222  
(412) 288-3400  
(Delaware, Pennsylvania, West  
Virginia)

111 East Wacker Drive  
Chicago, Illinois 60601  
(312) 565-5700  
(Illinois and Wisconsin)

P.O. Box 7948  
San Francisco, California  
94120  
(415) 393-1000  
(Arizona, Nevada and  
California)

P.O. Box 56527  
Atlanta, Georgia 30343  
(404) 522-2450  
(Alabama, District of Columbia,  
Florida, Georgia, Maryland, North  
Carolina, South Carolina and  
Virginia)

907 Walnut Street  
Des Moines, Iowa 50309  
(515) 243-4211  
(Iowa, Minnesota, Missouri,  
North Dakota and South  
Dakota)

Seattle, Washington 98101  
(206) 624-3980  
(Alaska, Hawaii and Guam,  
Idaho, Montana, Oregon,  
Utah, Washington and  
Wyoming)

Regional Offices

600 Atlantic Avenue  
Boston, Massachusetts 02106  
(617) 973-3000  
(Maine, New Hampshire, Vermont,  
Massachusetts, Connecticut,  
Rhode Island)

100 North Ninth Street  
Richmond, Virginia 23261  
(804) 649-3611  
(Virginia, North Carolina,  
District of Columbia, part of  
West Virginia, Maryland)

250 Marquette Avenue  
Minneapolis, Minnesota 55480  
(612) 783-2345  
(Minnesota, North Dakota, South  
Dakota, Montana, and parts of  
Michigan and Wisconsin)

33 Liberty Street  
New York, New York 10005  
(212) 791-5000  
(New York and part of New Jersey)

100 North Sixth Street  
Philadelphia, Pennsylvania 19109  
(215) 574-6000  
(Delaware, parts of Pennsylvania  
and New Jersey)

1455 East Sixth Street  
P.O. Box 6387  
Cleveland, Ohio 44101  
(216) 293-9800  
(Ohio, Kentucky, parts of  
Pennsylvania and West Va.)

104 Marietta Street, N.W.  
Atlanta, Georgia 30303  
(404) 231-8500  
(Georgia, Tennessee, Alabama,  
Florida, Louisiana, Mississippi)

230 South LaSalle Street  
P.O. Box 834  
Chicago, Illinois 60690  
(312) 380-2320  
(Iowa, and parts of Illinois,  
Indiana, Wisconsin and Michigan)

411 Locust Street  
P.O. Box 442  
St. Louis, Missouri 63166  
(314) 444-8444  
(Arkansas and parts of Illinois,  
Indiana, Missouri, Kentucky,  
Mississippi and Tennessee)

925 Grand Avenue  
Federal Reserve Station  
Kansas City, Missouri 64119  
(816) 881-2000  
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Oklahoma, Nebraska and part  
of Missouri and New Mexico)

400 South Akard Street  
Station K  
Dallas, Texas 75222  
(214) 651-6111  
(Texas, parts of Oklahoma,  
New Mexico and Louisiana)

400 Sansome Street  
San Francisco, California  
94120  
(415) 450-2000  
(California, Hawaii, Nevada,  
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# FEDERAL DEPOSIT INSURANCE CORPORATION

Headquarters: 550 17th Street, N.W., Washington, D.C. 20429

## Regional Offices

233 Peachtree Street, N.W.  
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(404) 221-6631

(Alabama, Florida, Georgia)

60 State Street, 17th Floor  
Boston, Massachusetts 02109  
(617) 223-6420

(Connecticut, Maine,  
Massachusetts, New Hampshire,  
Rhode Island, Vermont),

233 South Wacker Drive,  
Suite 6116  
Chicago, Illinois 60606  
(312) 353-2600  
(Illinois, Indiana)

1 Nationwide Plaza, Suite 2600  
Columbus, Ohio 43215  
(614) 469-7301  
(Kentucky, Ohio, West Virginia)

300 North Ervay Street,  
Suite 3300  
Dallas, Texas 75201  
(214) 749-7691  
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Texas)

2345 Grand Avenue, Suite 1500  
Kansas City, Missouri 64108  
(816) 374-2851  
(Kansas, Missouri)

1 South Pinckney Street, Rm. 813  
Madison, Wisconsin 53703  
(608) 252-5226  
(Michigan, Wisconsin)

1 Commerce Square, Suite 1800  
Memphis, Tennessee 38103  
(901) 521-3872  
(Arkansas, Louisiana,  
Mississippi, Tennessee)

730 Second Avenue South, Suite 266  
Minneapolis, Minnesota 55402  
(612) 725-2046  
(Minnesota, Montana, North Dakota,  
South Dakota, Wyoming)

345 Park Avenue, 21st Floor  
New York, New York 10022  
(212) 826-4762  
(New Jersey, New York, Puerto  
Rico, Virgin Islands)

1700 Farnam St., Suite 1200  
Omaha, Nebraska 68102  
(402) 221-3366  
(Iowa, Nebraska)

5 Penn Center Plaza  
Suite 2901  
Philadelphia, Penn. 19103  
(215) 597-2295  
(Delaware, Maryland,  
Pennsylvania)

908 East Main Street  
Suite 435  
Richmond, Virginia 23219  
(804) 643-6716  
(District of Columbia,  
North Carolina, South  
Carolina, Virginia)

44 Montgomery Street  
Suite 3600  
San Francisco, Calif. 94104  
(415) 556-2736  
(Alaska, Arizona, California,  
Guam, Hawaii, Idaho, Nevada,  
Oregon, Utah, Washington)

Regional Offices

3 Center Plaza, Suite P-400  
Boston, Massachusetts 02108  
(617) 223-2274  
(Connecticut, Rhode Island,  
Vermont, New Hampshire,  
Massachusetts and Maine)

1211 Avenue of the Americas  
Suite 4250  
New York, New York 10036  
(212) 399-2997  
(New York, New Jersey)

3 Parkway, Suite 1800  
Philadelphia, Pennsylvania 19102  
(215) 597-7105  
(Pennsylvania and Delaware)

One Erievue Plaza  
Cleveland, Ohio 44114  
(216) 522-7141  
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Richmond, Virginia 23277  
(804) 643-3517  
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Maryland, District of Columbia,  
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229 Peachtree Street, N.E.  
Atlanta, Georgia 30303  
(404) 221-4926  
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Chicago, Illinois 60606  
(312) 353-0300  
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165 Madison Avenue, Suite 800  
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(816) 842-1648  
(Iowa, Missouri, Nebraska,  
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Dallas, Texas 75270  
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1405 Curtis St., Suite 300  
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Arizona, New Mexico)

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Portland, Oregon 97205  
(503) 221-3091  
(Montana, Idaho, Oregon,  
Washington, Alaska)

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Suite 2101  
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(415) 556-6619  
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1776 G Street, N.W.  
Washington, D.C. 20552  
(202) 357-1000

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AGENCY

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507 The Arcade  
Cleveland, Ohio 44114  
(216) 621-4525

NORTHERN OHIO REGIONAL INFORMATION CENTER  
One Playhouse Square  
Cleveland, Ohio 44115  
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DEVELOPMENT  
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Miami, Florida 33167  
(305) 685-5731

R. L. POLK & COMPANY  
Urban Statistical Division  
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Cambridge, Massachusetts 02138  
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(301) 763-7315

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Cleveland Heights, Ohio 44118  
(216) 321-6775

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